ELECTRICAL WEST

OUTLOOK

THIS is no time to sell the electrical industry short. Here are the reasons for looking forward with confidence: Loads are at all-time peaks. Production is taxing generating facilities. Distribution systems are operating at full capacity. Millions of customers are waiting to buy more appliances and apparatus as quickly as we can sell them. Researchers are developing more products and services. Don't let an interlude of over-pessimism stop forward progress.

NOVEMBER 1937

McGRAW-HILL COMPANY OF CALIFORNIA

PRICE 25c PER COPY

Can anything be
CLEANER
than a modern
ELECTRIC
RANGE?
$40,000 CONTEST... Win a $12,000 or an $8,000 home...or one of the one hundred $200 awards... just for writing a short essay on "Why the Electrical Way of Living Appeals to Me." Get details and entry blank from your nearest Edison Company office
SATISFACTION
AN ALL-ELECTRIC KITCHEN
NEW
KITCHENS FOR
OLD
GET AN ELECTRIC RANGE
Recent sales of electric ranges in Edison territory are a forerunner of the biggest Winter business in history, according to merchandising experts. Edison will continue to feature ranges in its advertising and dealers will do well to coordinate their selling along the same lines. Together these efforts will unquestionably increase the pace of range sales which already is moving at a faster clip than any major appliance.

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ELECTRICAL WEST

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This problem of teaching the public that not all is bad with the electrical industry—especially the utility section of the industry—becomes increasingly hard. Free services, lower rates, greater reliability—nothing seems to make any difference. It's heartening to hear, therefore, that the Montana Power Company is gaining ground in the struggle. As Mr. Booker, the author of "Public Antipathy and Its Cure" (page 23), says, Montanans are not any less vitriolic than their brothers in other states. Nevertheless, by means of a simple—so simple that it's almost devastating—method, Mr. Booker and his company have succeeded in making friends.

Contractors will find the national convention of the N.E.C.A., held in Los Angeles last month, completely reported in the Trade Associations section, page 46.

Underground service to new residential subdivisions grows in importance as realtors become more insistent on including this feature in their properties without unduly increasing the cost of lots. One possible solution is offered by the California installation covered on page 38. A survey of engineering and operating problems, as discussed by the P.C.E.A. appears on page 45.

FASTEST

DURABLE ELECTRIC COOKING UNIT EVER BUILT...

SUBMERGED IN THE DEPTHS
Yet connected to an electric circuit and turned on! When brought to the surface this modern Hotpoint Hi-Speed Calrod unit glowed to cherry red heat. Calrod's strong rust-proof coils are sealed secure from the damaging effects of water, grease and oxygen.

CALROD STOCK UNITS, exactly like the units in your customers' electric ranges, were tested by Hotpoint engineers under identical conditions with units of other design and manufacture. And Calrod, every time—in every test—proved that it is the fastest durable electric cooking unit ever built—*from* 11% *to* 21% *faster than any other electric unit!*

All Hi-Speed Calrod Units Maintain Full Rated Wattage for Life . . .

High wattage means high speed in any electric cooking unit. The secret of Calrod's overwhelming leadership is the ability of every stock unit to operate at full-rated wattage *for life.* You can depend upon Calrod's amazing speed and efficiency for years to come—not for today alone.

DROPPED 2,000 FEET FROM THE CLOUDS
This Hotpoint Calrod unit was hurled from an airplane, flying 2,000 feet above the earth. It hit the ground with terrific impact, yet worked perfectly when connected to an electric circuit. Only Calrod's sturdy construction can withstand such brutal punishment. It can be depended upon for years of trouble-free service.

RESULTS OF TESTS
Speed of Heating Water—New Units—Operated at Nameplate Constant Wattage

Unit	Watts	Quantity of Water	Time to Heat 50° F. to 207° F.
CALROD	1200	1 quart	8.79 minutes
X1	1200	1 quart	12.45 minutes
X2	1200	1 quart	9.86 minutes
CALROD	2100	2 quarts	9.40 minutes
X1	2000	2 quarts	13.74 minutes
X2	2000	2 quarts	11.88 minutes

CALROD HI-SPEED UNIT NOT ONLY FASTEST BUT MOST DURABLE

Six Times Longer Life Than Other Electric Range Units

was shown by Calrod in a series of independent life tests conducted for Hotpoint by engineers of the famous Electrical Testing Laboratories. Calrod showed an average life in excess of 4,565 hours.* The second best unit lasted an average of only 702 hours—the third best an average of only 264 hours. Calrod was proved beyond dispute to be the most durable electric range unit in the world. Full details of the tests may be obtained by writing Electrical Testing Laboratories, New York City.

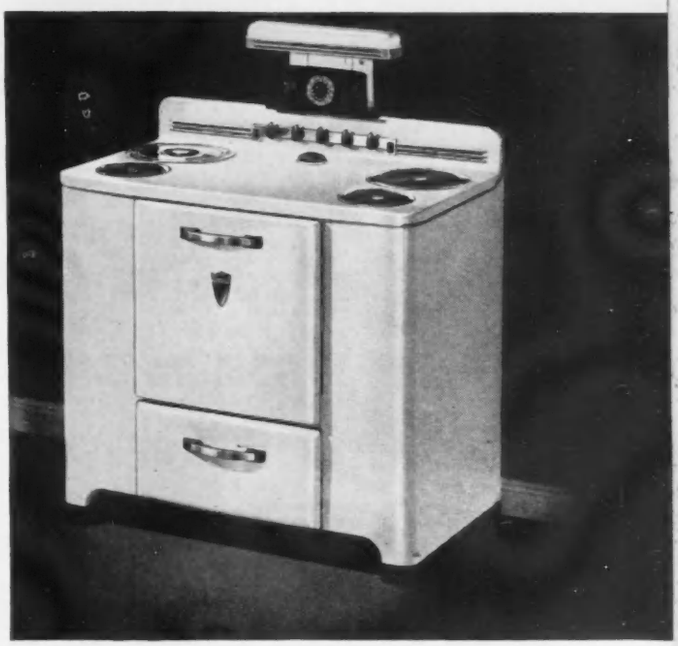
Don't neglect the opportunities presented by these facts. Write today for full details about the rich sales opportunities offered you by Hotpoint Electric Ranges with Hi-Speed Calrod.

* No Calrod units had failed when these tests were completed.

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.
5612 West Taylor Street, Chicago, Illinois

PROVE THE SUPREME SPEED OF CALROD

Clock Calrod's speed in your own laboratories. Hotpoint will be pleased to supply full information for duplicate tests. Write today to the Edison General Electric Appliance Company, Inc., Engineering Department, 5612 W. Taylor St., Chicago.

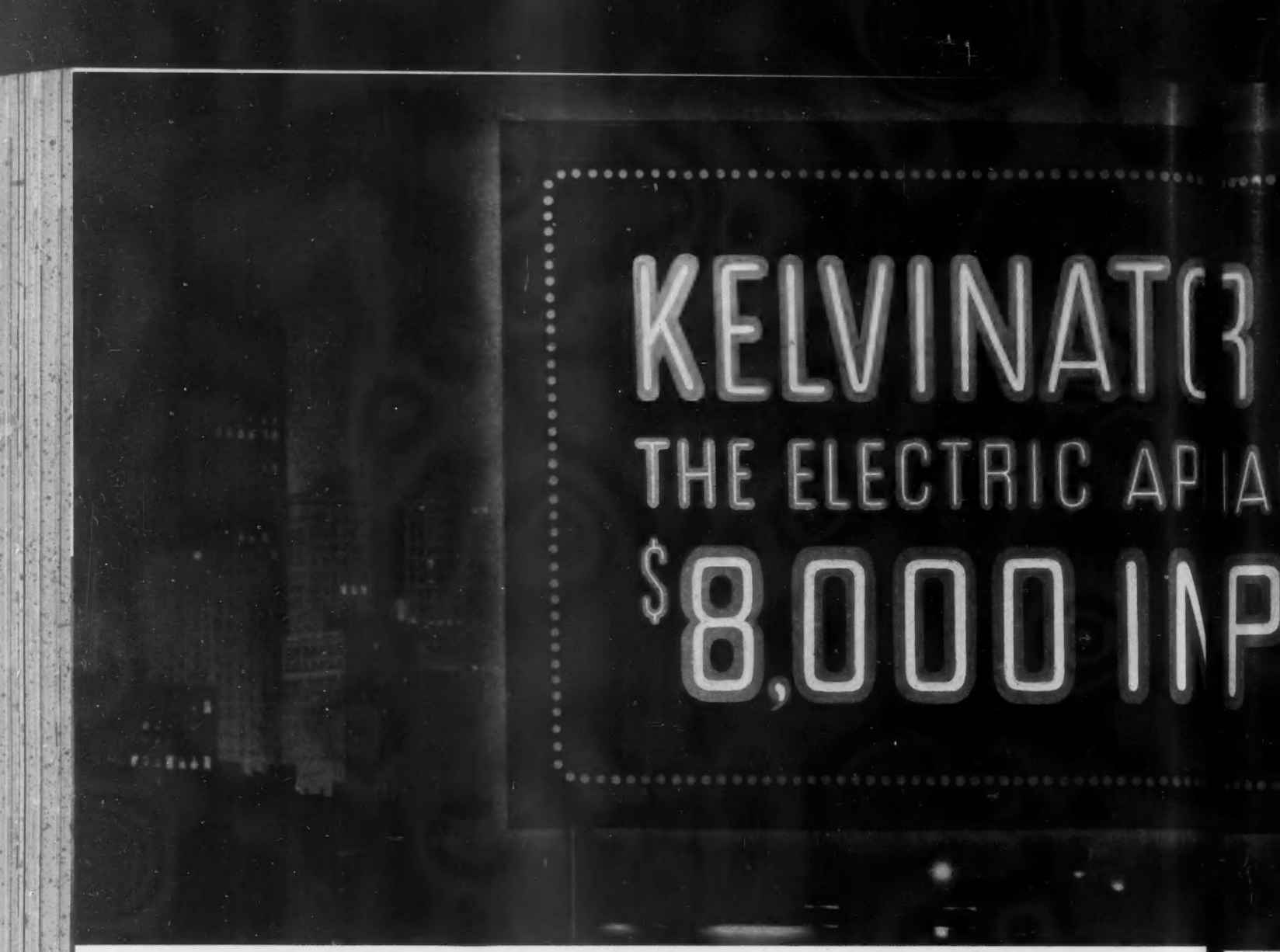


The Popular Priced NEW DORCHESTER

Hotpoint's specially designed model for Fall and Christmas selling. All porcelain enamel or porcelain with Calgloss body. Trimmed in chromium. Includes new semi-direct lighting lamp with bracket and condiment shelf; new Time Chime. Three Hi-Speed Calrod units and 6-quart Thrift Cooker. Smart modern styling.

Hotpoint

ELECTRIC RANGES WITH HI-SPEED CALROD



BREAKING THE GREATEST STORY IN

KELVINATOR IS COMING WITH DEVELOPMENTS THAT WILL SELL REFRIGERATORS AS THEY'VE NEVER SOLD BEFORE . . . WITH A BASICALLY NEW METHOD IN SALES-PROMOTION AND ADVERTISING THAT THE WHOLE INDUSTRY WILL APPLAUD . . . WITH A BRAND-NEW KIND OF CAMPAIGN THAT'S HOTTER THAN A CANNON-CRACKER . . . AND THIS GREAT, BIG CONTEST THAT'S OPEN TO EVERYONE IN THE INDUSTRY — DISTRIBUTORS, WHOLESALEMEN, DEALERS, DEALER SALESMEN, FRIEND OR FOE, PRESIDENT OR OFFICE BOY — OFFERING A $5,000 FIRST PRIZE FOR WRITING FIFTY FRANK WORDS!

RWIN REFRIGERATOR HISTORY—

DETROIT, MICHIGAN—October 27th: The word is out: bigger things than ever before are happening at Kelvinator.

Under lock and key, they have engineering developments that will give the industry something red-hot to think about . . . things that dealers and their salesmen will cheer about, and consumers will welcome with open purses.

They've had the courage to tackle and straighten out some of the biggest and toughest problems in sales-promotion, dealer-backing and advertising . . . and have come through with brilliant new plans, methods and campaigns that will register a smash-hit.

To top it all off, they spring this contest idea . . . with $5,000 first prize and seven other prizes bringing the total up to a plump $8,000 . . . open to every living soul connected with the whole electric appliance industry (except, of course, factory and office employees of the Kelvinator Division of Nash-Kelvinator).

The prizes will be won by the 8 persons writing the best fifty-word opinions of the whole shooting-match . . . after everyone has had a chance to see the new Kelvinators and get full details on every plan. That's going to happen *soon*.

It's a cinch that everybody is watching Kelvinator like a hawk anyhow—friends and foes alike. And they all know from experience that it pays to watch Kelvinator.

What the contest does is to put some extra fun into it . . . and some prizes hefty enough to command anybody's respectful regard . . . from chairmen-of-boards and presidents to office boys and truck drivers.

And they're all heartily invited . . . with a tip to keep eyes peeled and ears cocked for further word on the biggest, *hottest story since the modern refrigerator was born.*

PROFIT FROM *Personal Proof* IN 1938

The greatest "Kitchen Proof" program in all history! More powerful! More complete! More convincing than ever!

New SUPER-CAPACITY FROSTER

Freezes more ice, faster . . . has *one-third* more frozen storage space. Multi-service tray has 5-lb. ice capacity.

Kitchen-proved

THE PARADE STA

...HEAD with the new 1938 Kitchen-proved

Westinghouse REFRIGERATORS

join another "BIG HIT PARADE!"

featuring

Humidified Cold In new
MEAT STORAGE COMPARTMENT

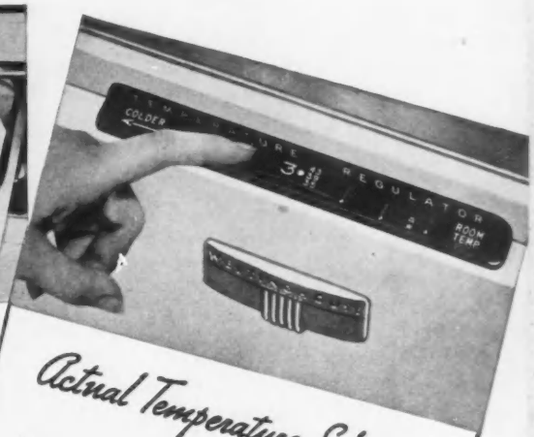
It's the *feature* of the year — a big step forward in safe food preservation! Keeps meats fresh and tasty for days. Enclosed porcelain construction retains natural moisture and flavor.

Kitchen-proved

Visible Humidity
In the NEW HUMIDRAWER

Twice the space for fresh fruits and vegetables — in this full-width, porcelain compartment with transparent glass top. Keeps fresh foods at their best, a week's supply at a time.

Kitchen-proved



Actual Temperature Selection
with New
ZONE CONTROL REGULATOR

Gives temperature desired at any time — regardless of kitchen temperature. Assures better food protection, more efficient operation. Simple "finger-tip" control in new convenient location.

Kitchen-proved

MANY OTHER OUTSTANDING FEATURES
IN THIS COMPLETE, YET SIMPLIFIED LINE

Every model all-steel construction! All powered with thrifty ECONOMIZER Unit — 10 hours out of 12 it *uses no current* at all! Many new convenience features *plus* sales making accessories! Sensational values in every model! And exactly *the model* for every prospect!

Complete, yet simplified line — plus new low-cost finance plans — reduces your investment, speeds up your selling, permits you to "trade up" easier and make more money. In short, Westinghouse is **ALL YOU NEED** for more sales *easier* in 1938.

IMPROVED EJECT-O-CUBE TRAYS

The *original* fast-freezing, all metal, quick-releasing ice tray — now better than ever, even *easier* to use!

Kitchen-proved

...STARTS NOW!

In plenty of time for the 1937 Christmas season! Offer brand new 1938 *Kitchen-proved* refrigerators to holiday buyers! Mail the coupon today!

Westinghouse Electric & Mfg. Company
Mansfield, Ohio. (Dept. 806)

Please have one of your representatives show me the complete "setup" on the new 1938 Kitchen-proved Refrigerators.

Name .....

Address .....

OKONITE VARNISHED FABRICS

VARNISHED CAMBRIC

OKOCLOTH

OKONITE VARNISHED CAMBRIC CABLES have a long-established record of reliable performance. This record is represented by thousands of installations in all conditions of use throughout the country.

OKOCLOTH FABRIC, a more recent but well-demonstrated insulation, definitely increases the wide scope of varnished cambric...OKOCLOTH FABRIC was specially developed for conditions where a higher degree of resistance to heat and oil is required.

Full knowledge of the use possibilities of OKOCLOTH CABLES is important because of the increasing number of applications which will be found for them. Details of voltage and temperature ratings and other characteristics of OKOCLOTH will gladly be furnished upon request.

THE OKONITE COMPANY

Founded 1878

THE OKONITE-CALLENDER CABLE COMPANY, INC.

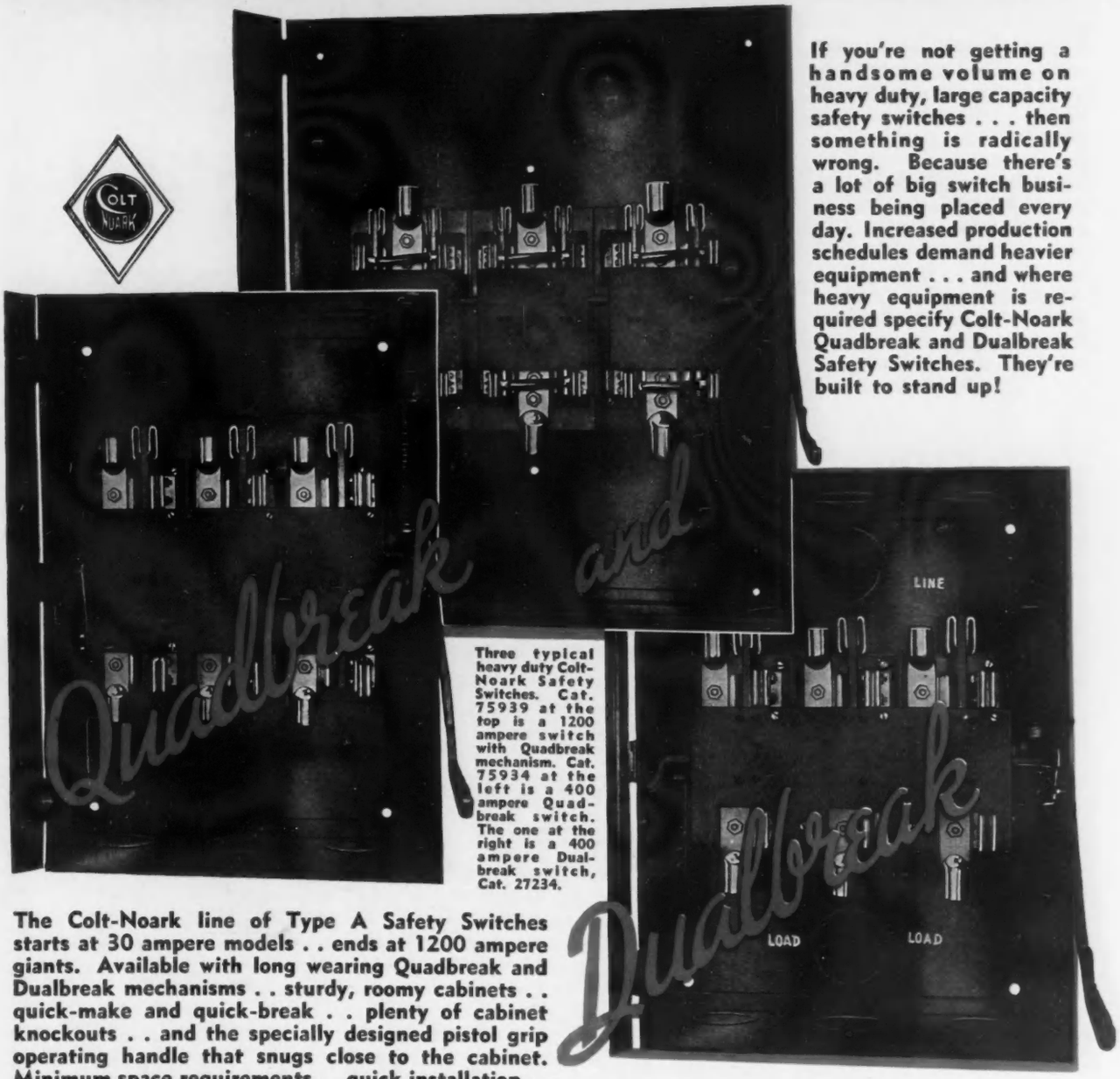
EXECUTIVE OFFICE: PASSAIC, N. J.

New York Boston Seattle Buffalo Chicago Dallas Detroit Atlanta
Philadelphia Los Angeles Pittsburgh St. Louis Washington San Francisco

Factories: Passaic, N. J. • Paterson, N. J.

OKONITE QUALITY CANNOT BE WRITTEN INTO A SPECIFICATION

Two Names! that mean bigger sales in big switches



If you're not getting a handsome volume on heavy duty, large capacity safety switches . . . then something is radically wrong. Because there's a lot of big switch business being placed every day. Increased production schedules demand heavier equipment . . . and where heavy equipment is required specify Colt-Noark Quadbreak and Dualbreak Safety Switches. They're built to stand up!

Three typical heavy duty Colt-Noark Safety Switches. Cat. 75939 at the top is a 1200 ampere switch with Quadbreak mechanism. Cat. 75934 at the left is a 400 ampere Quadbreak switch. The one at the right is a 400 ampere Dualbreak switch, Cat. 27234.

The Colt-Noark line of Type A Safety Switches starts at 30 ampere models . . ends at 1200 ampere giants. Available with long wearing Quadbreak and Dualbreak mechanisms . . sturdy, roomy cabinets . . quick-make and quick-break . . plenty of cabinet knockouts . . and the specially designed pistol grip operating handle that snugs close to the cabinet. Minimum space requirements . . quick installation . . safe operation! For bigger profits in big switches . . put in Quadbreak and Dualbreak Switches!

COLT'S PATENT FIRE ARMS MFG. CO.,
ELECTRICAL DIVISION
HARTFORD, CONN.
H. B. Squires Co., Pacific Coast Representative

Safety Switches up to 1200 Amperes

100 Years of Manufacturing Experience is back of every Colt Built Product

COLT-NOARK

SWITCHES INDUSTRIAL CONTROL EQUIPMENT FUSES

Boston
New York
Chicago
Philadelphia

FRIGIDAIRE WINS

With Sensational New Line of Refrigerators

AMERICA'S NEW ECONOMY SENSATION!

New 1938 Frigidaire with New Silent Meter-Miser saves up to 25% more on operating cost than even the current-saving Frigidaire of 1937!

● Frigidaire now introduces the most economical—most advanced—refrigerator in all its history! The new 1938 Frigidaire with the new Silent Meter-Miser! Not only does it slash current cost to an all-time low, but saves amazingly more, also, on food—on ice—on upkeep! And is a marvel of sales appeal, besides—with new improved styling . . . new interior appointments . . . new engineering features!

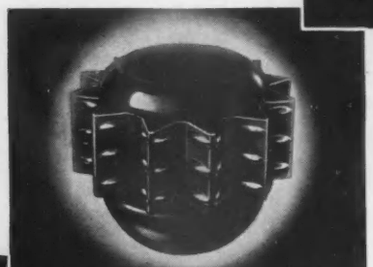
There's the New Silent Meter-Miser. And the NEW "Double-Easy" Quickube Tray. And a NEWLY styled 9-Way Adjustable Interior—with NEW, large Moisture-Seal Hydrators . . . NEW chrome-trimmed Cold Storage Tray . . . and a NEW ovenware set of 3 covered dishes and 2-quart water jug! And other NEW features.

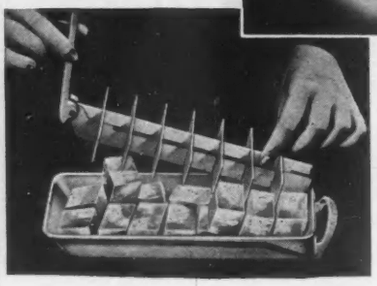
What's more, the 1938 selling program is as sweepingly advanced as is the new Frigidaire.

Sales strategy will pack more punch than ever! Advertising will be harder-hitting! Showroom material will be more impressive! Everything is set for another record-shattering Frigidaire year! And Frigidaire Dealers will profit!

New Silent METER-MISER

Saves more on operating cost than ever! Simplest refrigerating mechanism built! Automatically oiled, cooled. Completely sealed. Best selling feature of America's easiest selling refrigerator!





New "Double-Easy" QUICKUBE TRAY

Another Frigidaire triumph! Comes out of freezer at a finger's touch! Releases ice-cubes instantly! All-metal for faster freezing! And only Frigidaire has this sensational "double-easy" sales advantage.

You'll do better than ever with FRIGIDAIRE

THE HEADLINES AGAIN!

• Ranges • Water Heaters • and Home Laundry Equipment

NEW FRIGIDAIRE ELECTRIC RANGE

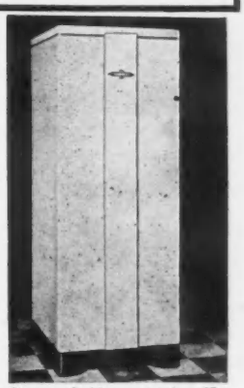
OFFERS MORE ADVANCED COOKING AND BAKING FEATURES THAN ANY OTHER 2 RANGES COMBINED!

Has new Frigidaire-designed Chromolox "Speed-Heat" surface units. Also, new, large "Even-Heat" Oven. Line includes 5 models —a high-quality model in every price class! See the complete line of sensational Frigidaire Electric Ranges without delay!

NEW FRIGIDAIRE ELECTRIC WASHER AND IRONER

Feature for feature, the beautiful new Frigidaire Washer and the new Frigidaire Ironer are the outstanding appliances in their field. Washer has specially-designed new Frigidaire Saturator . . . exclusive, improved tap release wringer . . . rounded-bottom, glass-wool insulated tub. Ironer is beautifully styled and offers many new conveniences!

NEW FRIGIDAIRE ELECTRIC WATER HEATER



One of the most efficient electric water heaters ever built! Has improved glass-wool insulation; new, more efficient type thermostat; new, improved type of heating element.

● Frigidaire now enters new fields! Leads the way to new and greater selling opportunities for all Frigidaire Dealers! For this outstanding, well-rounded line of new products — backed by the names of Frigidaire and General Motors — makes Frigidaire franchises tremendously more valuable in 1938.

And to give Frigidaire Dealers a greater selling advantage, Frigidaire will put behind *each and every* new Frigidaire appliance the same hard-hitting sales strategy that has characterized the promotion of the Frigidaire refrigerator—made it the largest-seller in the industry!

in 1938

Frigidaire men are set to go again in 1938! To shatter refrigerator sales records again! And to hang-up new selling records in other appliance fields! They'll do better than ever with Frigidaire in 1938!

GM FRIGIDAIRE

Made only by General Motors

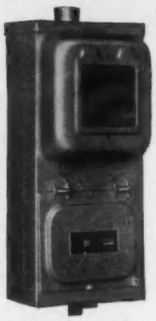
● Weather is as nothing in the life of an Aluminum Meter Case.

Does that suggest things to you? Outdoor cases are common-sense convenience — to the consumer, who doesn't want to be bothered by your meter readers, and who actually fears criminal impostors—as well as convenience to you, because you want results from every call your readers make, and because you want to stop current diversion.

Outdoor installations are practical with cases made from Alcoa Aluminum. They don't rust, so painting is unnecessary; there is no danger of corroding through, or of staining adjacent walls.

The advantages sum up to cash savings, quickly canceling the slightly greater cost. From reliable manufacturers you can get cases pressed from Alcoa Aluminum sheet, or die cast with intricate lugs, bosses, and identifying marks cast integrally. They can be made to your specifications. If you wish we will send you the names of manufacturers who can supply you with cases made from Alcoa Aluminum.

ALUMINUM COMPANY OF AMERICA, 2132 Gulf Building, Pittsburgh, Pa.



Made from Alcoa Aluminum Sheet

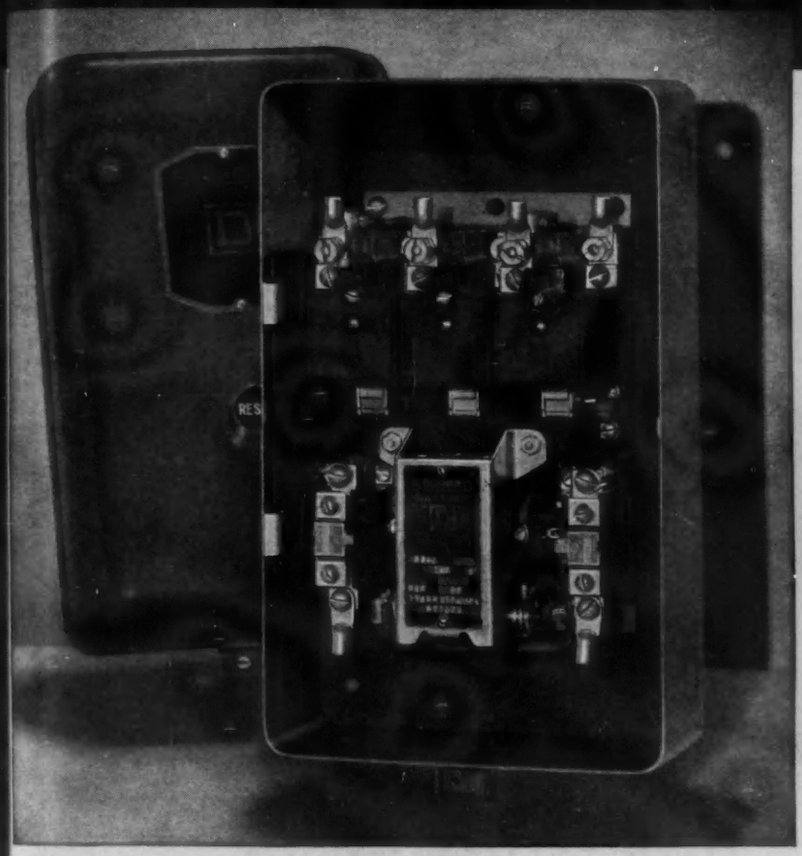
Die Cast from Alcoa Aluminum

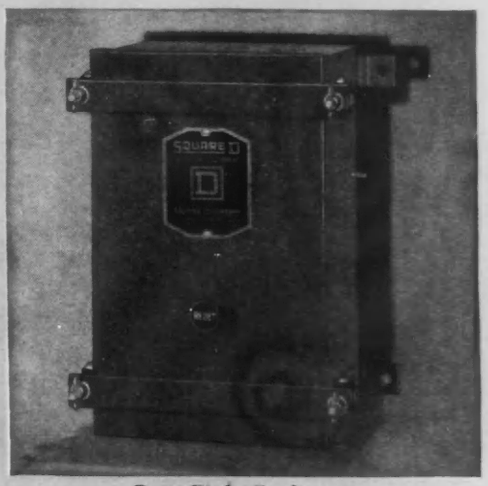
ALCOA ALUMINUM

The new line of Class 8536 A-C-

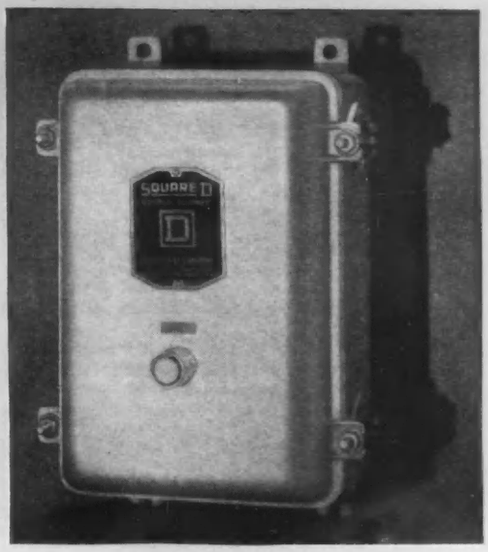
SQUARE D AUTOMATIC STARTERS

is now available with all types of enclosures





Dust-Tight Enclosure



Water-Tight Enclosure

● The desirable features of this new line of starters were quickly recognized. Vertical operation with "E" type magnet. Silver to silver contacts. Extreme accessibility of all parts for inspection and maintenance. The Square D swing-out interior for easy wiring.

This new line is now complete in NEMA Sizes 1, 2 and 3—that is, polyphase ratings up to 30 H.P., 220 volts; 50 H.P., 440-550 volts.

These starters can also be supplied with the following special enclosures to meet all industrial applications—

Water-Tight—NEMA Type 4—with cast aluminum (or cast iron) enclosures, rubber gaskets, hinged covers and swing bolts to hold covers tight.

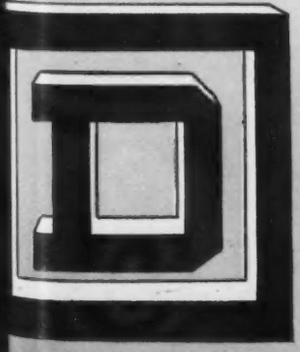
Dust-Tight—NEMA Type 5—Size 1 has cast aluminum enclosure. Sizes 2 and 3 have sheet steel enclosures with cover straps, swing bolts and felt gaskets.

Dust-Tight—NEMA Type 9—built according to Underwriters' specifications for Class II, Group G hazardous locations.

Explosion Proof—NEMA Type 7—built according to Underwriters' specifications for Class I, Group D hazardous locations.

Also combination starters with disconnect switch or circuit breaker; reversing starters or contactors; special control panels.

This new design is adaptable to meet all requirements for industrial applications or machine tool control.



CALL IN A SQUARE D MAN

SQUARE D COMPANY

LOS ANGELES - DETROIT - MILWAUKEE

SQUARE D COMPANY CANADA LTD. TORONTO, ONTARIO

ZEAL

• • • not apathy

In the promotion of any business, the zeal—starting with the top executive—usually tapers in intensity with the broadening of the organization diagram.

The executives of the TRIANGLE organization believe that they cannot function with becoming precision unless the organization flow is fully impelled by exactness in every remote detail. It must be right!

So zeal for Precision is the first qualification of the most obscure worker. . . .

ZEAL can be acquired as a habit just as easily as can apathy . . . and the result is an organization with which it is refreshing to do business.

TRIANGLE CONDUIT & CABLE CO., INC.

Horace Harding & Queens Blvds. ELMHURST, NEW YORK CITY, N. Y.

PACIFIC COAST DIVISION

C. C. Hillis, Vice-President in Charge of Sales, 390 Seventh St., San Francisco, California

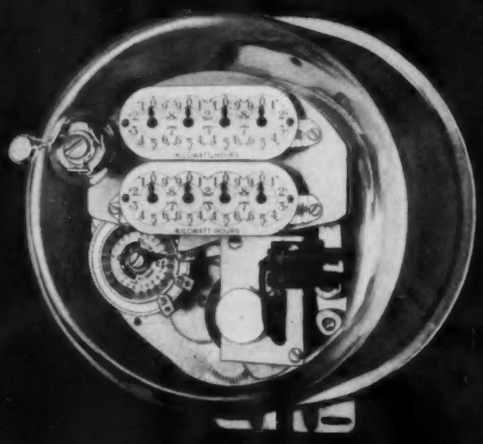
ARTERIES FOR ELECTRICAL

INCORPORATED SYSTEMS

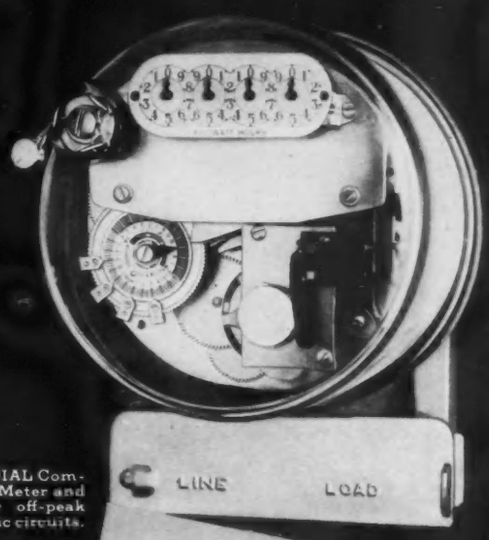
It MUST be right!

COMBINATION METERS

FOR TWO-RATE OR OFF-PEAK LOADS



The TCS DOUBLE DIAL Combination Watthour Meter and Time Switch. For metering two-rate or off-peak loads.



The TCA SINGLE DIAL Combination Watthour Meter and Time Switch. For off-peak metering on domestic circuits.

● **Westinghouse offers two new meters, each combining in a single unit both watthour meter and time switch. These meters were designed specifically for metering and controlling two-rate or off-peak domestic loads. Self-contained construction permits saving in cost and space by eliminating the separate time switch.**

Westinghouse combination watthour meters and time switches are supplied in either the "A" or the "S" types of mounting. A wide variety of contact arrangements are provided. For complete information, see your nearest Westinghouse Meter Specialist or write for Catalog Section 42-770. Address Westinghouse Electric and Manufacturing Company, Dept. 7-N, East Pittsburgh, Pennsylvania.

J 40116

● RELIABLE METER ELEMENTS

The watthour meter elements used in these new meters are the familiar Westinghouse Types "CS" or "CA" which are outstanding for sustained accuracy and low maintenance.

● WIDE-RANGE TIME DIAL

The time dial is normally arranged for two "on" and "off" operations every 24 hours. More daily operations may be obtained by the addition of cams. A minimum time between operations of only one and one-half hours may be obtained.

● STURDY CONTACTS

Heavy duty contacts that have been thoroughly proved in protective relay service are used for control of the off-peak service. They have a nominal rating of 25 amperes but have capacity for 40 amperes, considerably beyond present-day requirements for domestic off-peak circuits.

W
WESTINGHOUSE ELECTRIC

Westinghouse

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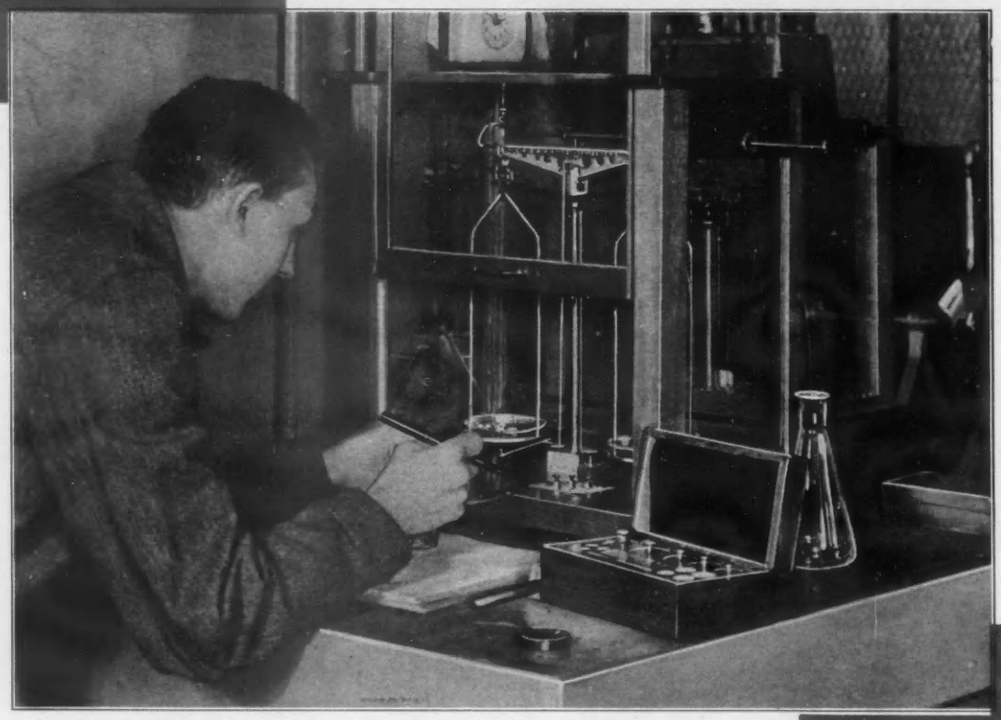

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For right here in our laboratory, raw materials either acquit themselves nobly or are convicted. . . . To name a few cases that come to trial—the moisture absorption percentage of rubber; the percentage of moisture content of cotton; the percentage of pure rubber in a compound; and qualitative and quantitative analyses of rubber, tin, zinc, and copper. . . . There's no compromise here, or in any other corner of our lab. . . . One milligram one way or another doesn't go. . . . It's an exact science, with us, this production or wires and cables for practically every known electrical application. On your next job, call in your nearest CRESCENT representative.

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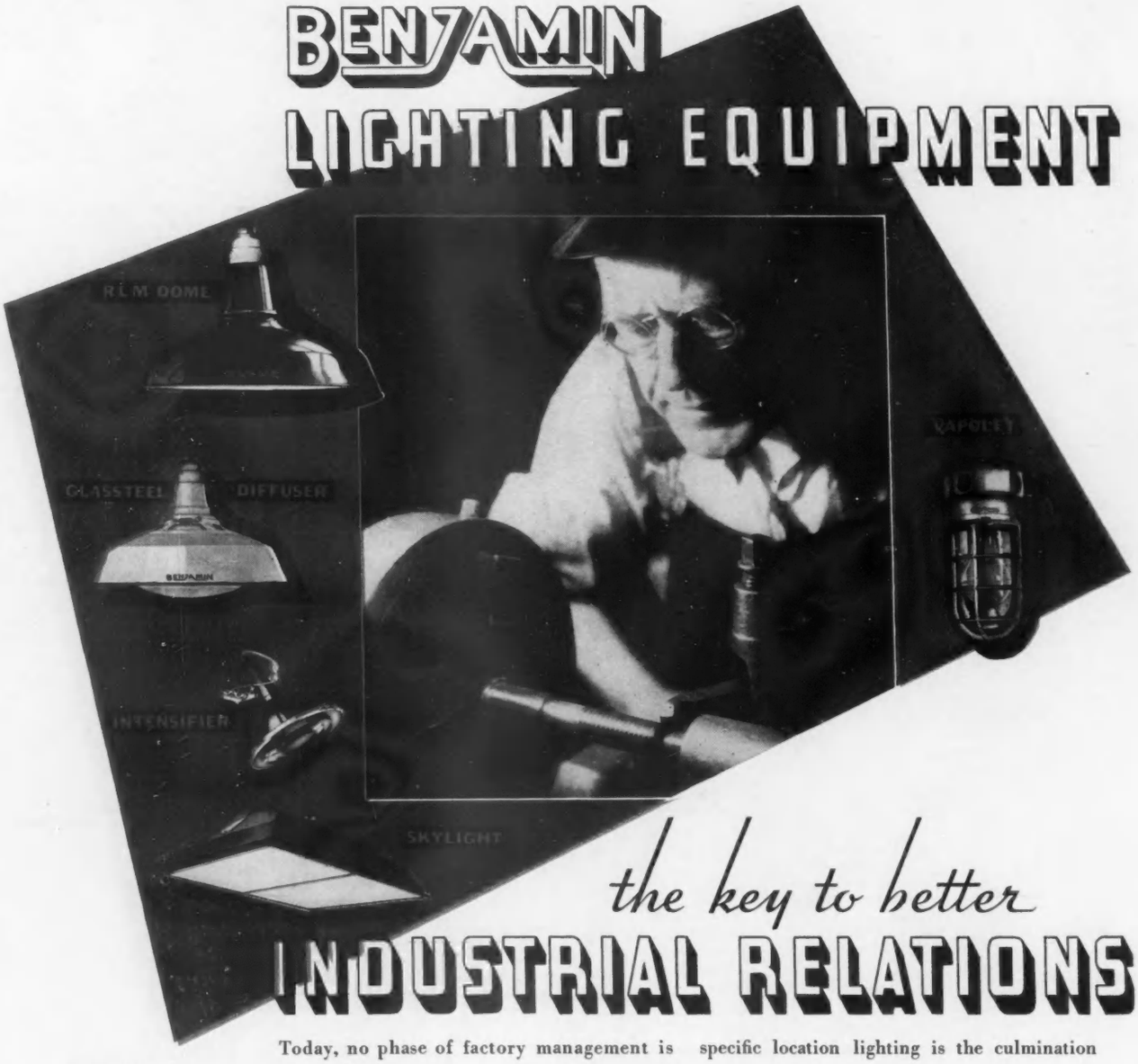
BENJAMIN LIGHTING EQUIPMENT



the key to better INDUSTRIAL RELATIONS

Illustrated in the panel above are typical Benjamin Lighting Reflectors used to secure General and Specific Location Lighting. Complete descriptions are to be found in Catalog No. 26.

Today, no phase of factory management is being given greater attention by the industrial executive than industrial relations. The part played by modern Benjamin factory lighting in furthering better industrial relations is therefore of paramount interest to management.

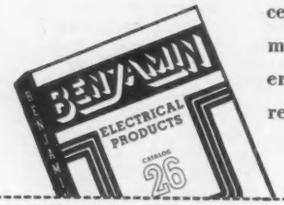
Unless the executive has thoroughly investigated the bearing of lighting upon industrial relations, he is certain to be surprised by the many ways lighting can influence and improve industrial relations.

Benjamin general and specific location lighting is the culmination of years of engineering effort to provide specially designed reflectors which deliver not only *sufficient* light but the *right kind* of light for every "seeing" requirement.

Benjamin's complete line of standard types and latest specialized types of lighting equipment, provide the last word in both general and specific location factory lighting. If you do not have the Benjamin Catalog No. 26, return of the coupon will bring you one by return mail.

Benjamin Modernized Factory Lighting Is a Fundamental Factor in Industrial Relations

It conserves the worker's eyesight, thus prolonging his period of high earning capacity. It minimizes fatigue, thus contributing to an alert, healthy mind and body. It protects him from accidents. It removes eyestrain, cause of "nerves" and irritability. It contributes to a cheerful working atmosphere, lightens the job, makes the factory a place where workers prefer to be employed.



Benjamin Electric Mfg. Co.
San Francisco, California.
RUSH CATALOG No. 26

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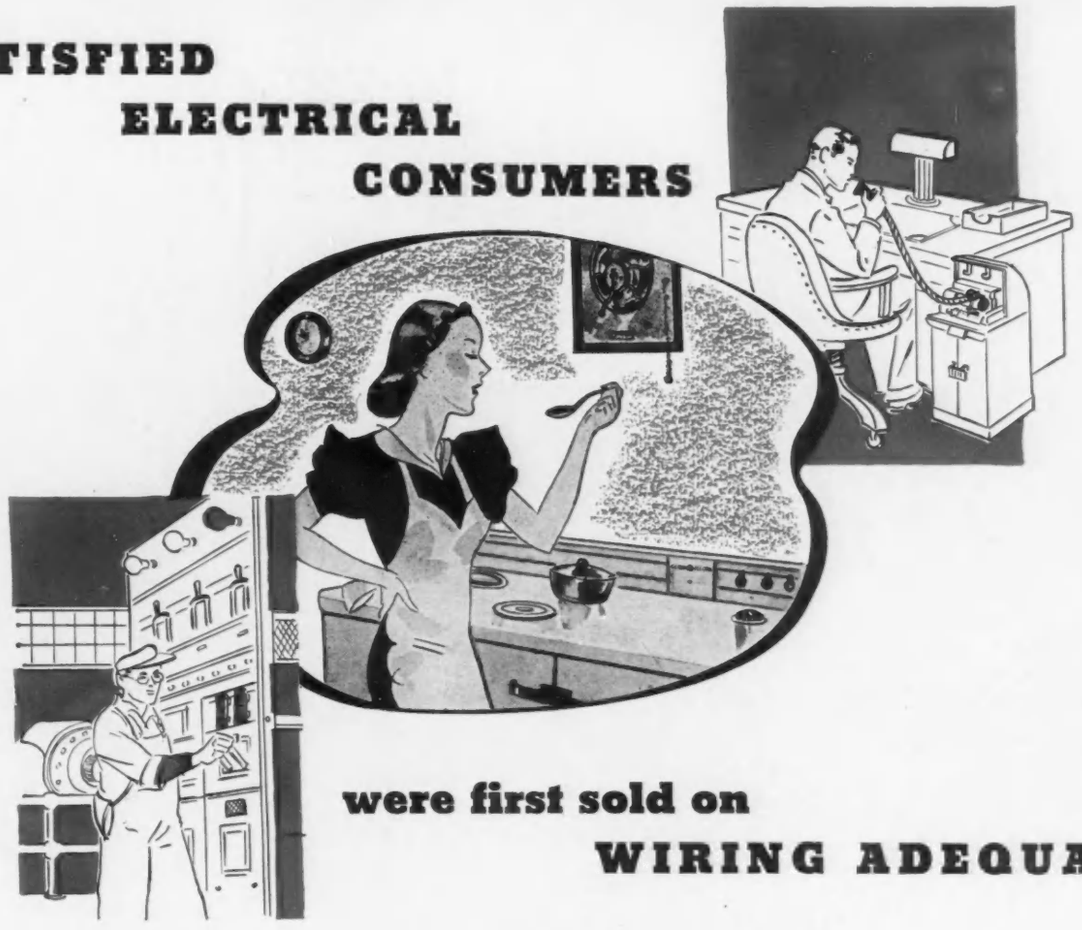
Benjamin Lighting Equipment is distributed exclusively through Electrical Wholesalers

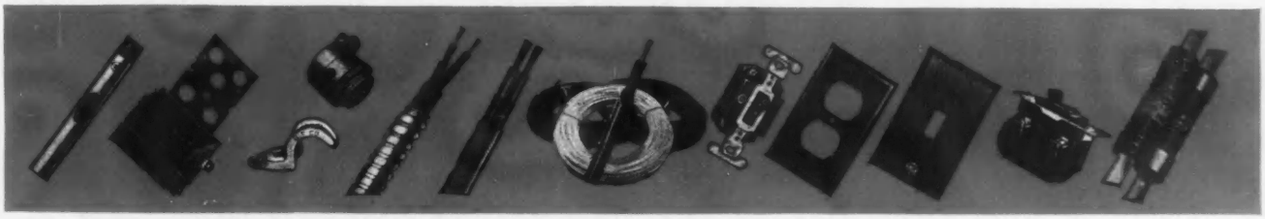
SATISFIED ELECTRICAL CONSUMERS



were first sold on WIRING ADEQUACY

The drive for adequate wiring is making many more satisfied electrical consumers. There are countless others to be told, then sold. What they don't know about electric service hurts them — through their pocketbooks. Without adequacy, wiring is overburdened, power is wasted, equipment is inefficient. Telling and selling is the front-line job of all who distribute electricity, install wiring systems, and sell electrical equipment. It's a profit drive.

For adequate wiring, General Electric has a complete line of Wiring Materials. G-E White Rigid Conduit, Boxes and Fittings, G-E Wire and Cable, and G-E Wiring Devices are made at one source and designed to be used together for permanence and economy. Get complete details from your nearest G-E Merchandise Distributor, or write to Section CDW-9211, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut.



GENERAL ELECTRIC

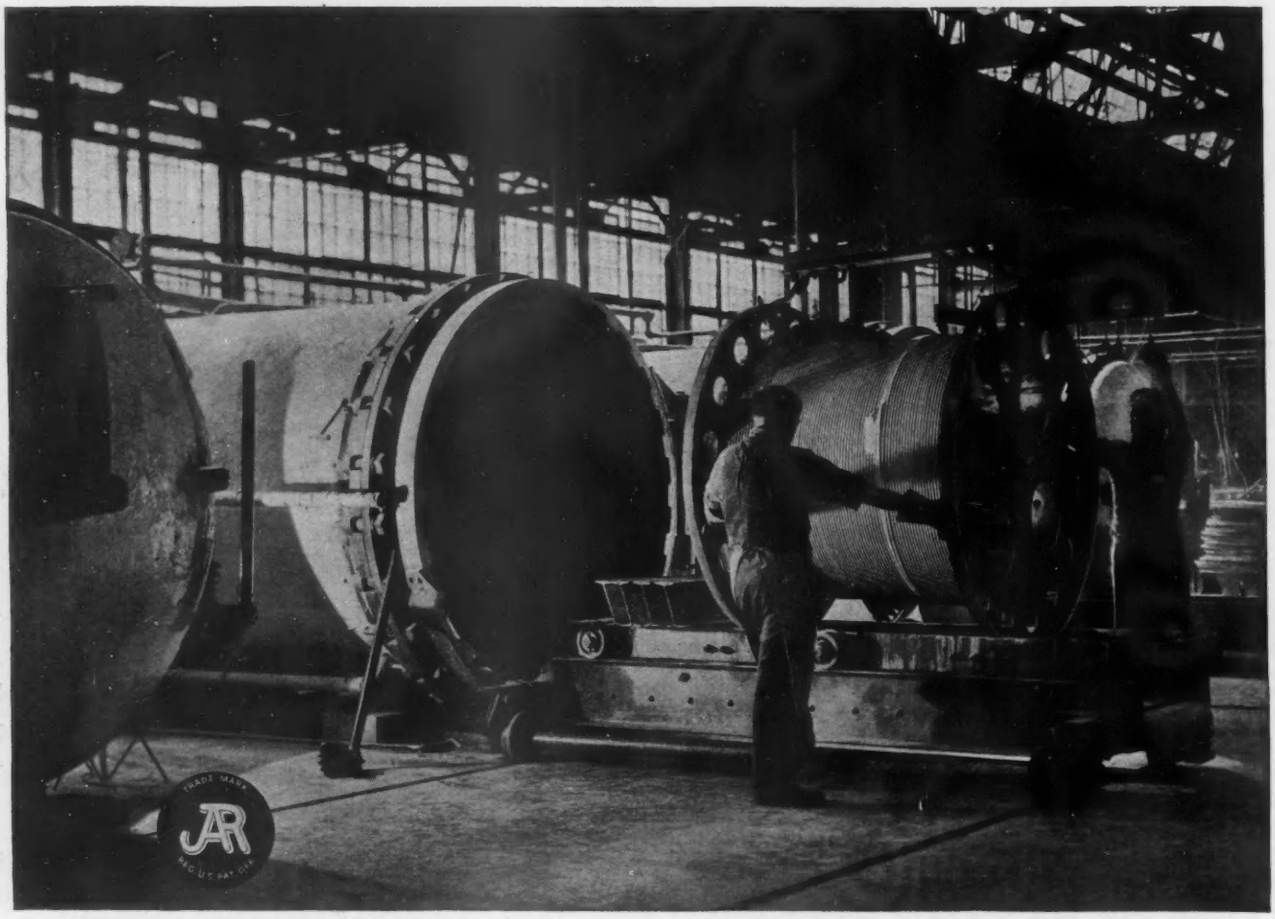
WIRING MATERIALS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Proper Vulcanization

OF RUBBER INSULATED POWER CABLE

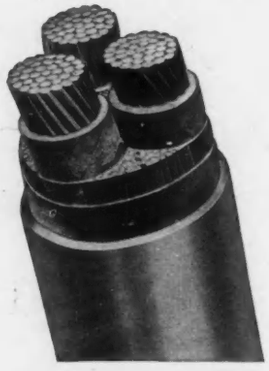
is a "fine art" at Roebling



HERE is an open vulcanizer ready to receive a reel of rubber covered wire for power cable. Under automatically controlled heat for a predetermined time, the rubber will come out properly vulcanized—to meet required electrical and physical qualities.

This is but one of the many processes of manufacture where close control and long experience guard the high quality of Roebling Rubber Insulated Power Cables.

These cables are available in a wide range of sizes and voltages and grades of insulation for power transmission, lighting and signal service—underground submarine or aerial.



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Los Angeles Portland San Francisco Seattle

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING

MODERN PLANS FEATURE *Safety*

NEW designs and new specifications for modern construction point definitely to a demand for *safety*. You can meet this specification by using electrical wires and cables manufactured by the American Steel & Wire Company for all your jobs.

Americore, Amparak, Amerite and Amperox Performite are wires that you can depend upon for long service. They are impervious to moisture. Heat does not soften them—nor do they crack in cold weather. You will find that they "pull" easily.

These wires are all protected by the well-known Safecote finish. This finish will not carry or support flame—an extra safety feature of unquestionable value.

Our building wires and cables are available in all standard colors. At your request we will furnish samples which will demonstrate to you their safety, economy, and durability. Send for our catalogue on Building Wires and Cables.

AMERICORE - - - - - - *Code*

AMERITE - - - - - - - *30%*

AMPARAK - - - - *Intermediate*

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COLUMBIA STEEL COMPANY · *San Francisco*

Pacific Coast Distributors of Electrical Wires and Cables for American Steel & Wire Company

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Presenting

THE WIDE-LIMIT METER

THIS is the watthour meter that will serve for both large and small single-phase loads.

It is a meter that starts on loads of less than one-half per cent of its nameplate rating. It is a meter that accurately measures loads up to four times its nameplate rating.

It is the new General Electric Type I-30 watthour meter with an operating range of 1200:1.

These statements describe the results of a development that has long been in progress — pushed more intensively during recent years as the need for better accuracy between wider limits became more acute.

One can better appreciate that this development is a long step forward when one considers how high a degree of accuracy was attained by the first high-torque meters.

Two factors contributed to this success: the skilled engineering that went into the design of the driving element to make it inherently accurate; and the proficient manufacturing that developed methods to maintain this accuracy at the high requisite rate of production.

In the Type I-30, therefore, electric-service companies are offered a watthour meter that has very broad applications . . . . a meter that will reduce inventory investment, assure low maintenance, and improve revenue.

Further information to help you determine the suitability of this meter for all your single-phase loads will be gladly furnished on request to the nearest G-E sales office or General Electric Company, Dept. 6—201, Schenectady, New York.

GENERAL ELECTRIC

400-25

ELECTRICAL WEST

DEVOTED TO THE ECONOMIC PRODUCTION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER AND ITS APPLICATION TO INDUSTRY, COMMERCE, AGRICULTURE AND HOME IN THE PACIFIC EMPIRE, AND TO THE MARKETING OF EQUIPMENT AND APPLIANCES AND OTHER UTILIZATION DEVICES IN THAT AREA

Public Antipathy and Its Cure

How the Montana Power Company Won Sympathy Through a Lecture

By C. T. BOOKER
Great Falls District Manager
Montana Power Co.

MONTANANS react toward the electrical industry in just about the same way the residents of other Western states do. They would wail to high heaven if power was cut off and they were forced to return to kerosene lamps, ice boxes, flat irons, etc. But knowing that this possibility is in the dim, distant future and not likely even then, they lump the industry together and curse it because of "high" rates.

It's a sorry state of affairs. Obviously. There are enough troubles paining the industry without having to add the unlovely torment of public hatred. That's why the situation deserves correction.

This is easy enough. What with various large corporations bidding for the Tugwells and the Farleys, we see it done on every side. Public relations is the answer. Educating the public to appreciate the industry, its problems and what it is doing.

The Montana Power Co. has succeeded in doing this. Through simple explanation and dramatization it has presented before Montana luncheon clubs the utility's problems. The results seem to be successful. After at least one meeting, that of the Great Falls Kiwanis Club, a majority of the audience stood around for hours asking further questions, seeking information and exclaiming how remarkable it was for the power company to operate and still serve the average customer at the price it did.

It all came as a consequence of the company's "Hotstick Lecture," an explanation of one phase of the work the utility must do before electricity can be turned on in the home. Excerpts from this, plus notes on the accompanying demonstration, follow:

Speaker: "In the early days when the lineman worked a circuit 'hot' his safety was all up to him. There were many accidents and electrocutions, so it became the policy to kill circuits that were being worked on. This did not discommode people much since about all the load in a house consisted of electric lights and they wouldn't be on in the daytime anyway. But now electrical appliances have increased to such a great extent that the story is different. The average house has an electric refrigerator, washer, iron, etc. Even the furnace thermostat is controlled electrically. So the utility realizes it has a grave responsibility in keeping continuous service in each alley. Thus the trend is back to working the circuits hot.

"However, Safety First became a byword with utilities long ago. They got busy and made every effort to lessen the hazard to the linemen. A lineman might be working a wire hot and might slip and grab another or in other ways accidentally touch another wire, completing a circuit through his body. 'How can this be stopped?' they asked themselves. The answer was to cover all the other wires and metal parts with an insulating device so that a man could not touch them. Rubber was the answer. Rubber goods were developed for every purpose — rubber gloves, sleeves, hoods, blankets, etc. The goods used on 2,200-volt circuits were guaranteed to withstand 10,000 volts, thus giving a good margin of safety.

"Now we shall demonstrate how a lineman would work a circuit hot in the early days, without any protection, and alone on a pole.

"You will notice the insulator of the top crossarm is shot off. This comes from the disappointed hunters who return to town and must shoot at something to unload their guns.

"This lineman will now attempt to change this insulator hot, but he will purposely rub his arm against the lower wire to show how an accident could happen."

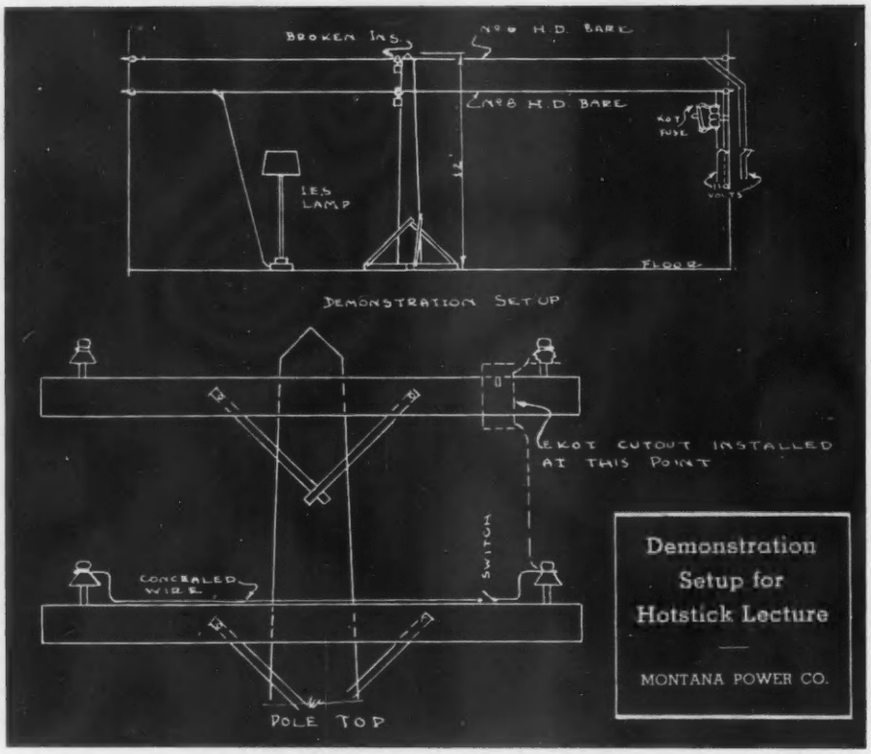
Note: At this point lineman reaches up with pliers to untie wire. He then carelessly touches lower wire with left arm. He has a small switch concealed on top of lower crossarm which he closes, blowing shotgun fuse. He falls back as though electrocuted.

Speaker: "As I have said, the first step was protecting a man by covering all other conductors, etc., with rubber. The companies also insisted there be two men on a pole when working hot wires. We shall now show you how this is done."

Note: Second lineman climbs pole. Rubber gloves are put on and rubber sleeves and hoods are placed on wires and insulators.

Speaker: "You now see that the danger has been greatly decreased. But still there were some deaths and accidents due to the fact that a pin hole in the rubber goods, or old rotten rubber, makes them useless, as the electricity will jump through. What then could we do to get away from that danger and make it safe? The answer was hot sticks.

"A hotstick is merely a tool fastened to the end of a long stick. These sticks are of the finest Sitka spruce, which are thoroughly dried and varnished so that they are guaranteed to hold 70,000 volts per foot of length. These tools are very ingenious. The manufacturer claims that he can duplicate any work on a pole with hotsticks that can be



done by hand. We had used hotsticks on high voltage lines, so we thought, 'Why not use them on 2,200-volt circuits?' So we called in the factory man, gave him our problems and he went back and designed the sticks. They are only four feet long and adapted to the distribution work.

"We will now change the broken insulator with hotsticks, showing each step as taken in actual practice. You will notice that we also use the rubber goods."

Note: Mechanical hand and clamp are explained. Small pole top gin is set up. Treated rope from single block is used with small hook for holding wire. Wire is untied, conductor is raised, old insulator is unscrewed, new one placed on pin. New tie wire is installed and the operation is complete.

Speaker: "You will note that the secret of the mechanical hand is the way it is rolled as it passes over and under the conductor and the way the man follows through.

"You have also noticed that it is quite a job wrapping one wire around another. Why not clamp two wires together? This was a step involving a bronze clamp. Since many of our operations include taps, the clamp would naturally fit these occasions. We picked out the side-opening Fargo clamp and again called in the hotstick man to make up a stick to use with this clamp. He developed this, and, although simple, it is nevertheless ingenious."

Note: Explain how clamp fits in vise and socket wrench fits head of bolt.

Speaker: "Many times we are called upon to install transformers in circuits for new customers or increased load. We will now assume that we have to hang a transformer for a new customer where the 2,200-volt line exists. We first mount a fuse cutout on the top arm. This fuse serves the same purpose as the little round plug fuses in your house. It protects our transformer and secondary circuits in case of short circuit troubles. This particular fuse differs from others in that the fuse element is surrounded by gun powder. When the element is red hot, the powder explodes, opening the circuit.

"We will now mount this fuse and tap it on to the wire with hotsticks, using a clamp. We have purposely omitted the transformer which steps the voltage from 2,200 down to 110 volts, since it is too heavy to handle. We use 110 volts on the top wires, feeding directly through the fuse to the secondary wires. A lamp is connected to these secondary wires which will represent our customer's house."

Note: Cutout is mounted and tapped on to top wire. Door is left open, then closed, and lamp is lighted.

Speaker: "Thus we have given this customer service without interrupting service to anyone else. They know nothing about this work since none of their appliances are shut down.

"There is just one other phase of our work I should like to touch on. That is our service end.

"Sometimes the lights go out in the house due to local trouble. We will now assume that a boy walks up the alley, comes to a piece of baling wire and throws it up over the 110-volt wires, thus shorting them out and causing the transformer fuse to blow. This will put out a small section of this alley. I will now short out the secondary causing the fuse to blow."

Note: Secondary is shorted, fuse blows and door of fuse box drops open. Attention is called to the indicating fuse.

Speaker: "What happens now? Our service department gets a call and some excited lady says her lights are out. I remember asking one lady where she was and she answered, 'In the dark.' After questioning, I finally got her address, made out a trouble-slip and gave it to the trouble-shooter. He immediately went to the address, turned in the alley and at once saw the fuse door open. This told him that the trouble was probably in the alley. So he looked up and down until he found the baling wire across the secondary wires. He removed this and put in a new transformer fuse. When he closed the fuse he restored service to that locality within a few minutes after the phone call came in."

Note: Lineman re-fuses and restores service.

Speaker: "And that, gentlemen, in a small way shows you some of the things that go on ahead of your switch."

Demonstration Materials Used in Hotstick Lecture

HOTSTICKS:

1. Heavy-duty cutter.
2. Mechanical hand—4-ft. handle.
3. Wire clamp—4-ft. handle.
4. Connector tool for Fargo connector—4-ft. handle.
5. Small crossarm gin for lifting line wire (special).
6. Hand line, single block and hook for fastening into gin.

FUSE CUTOUTS:

1. 50-amp., 5,000-volt porcelain enclosed Type EKOT fuse cutout.
2. 50-amp., 5,000-volt Type KOT drop-out fuse cutout.
3. Necessary fuse cartridges.

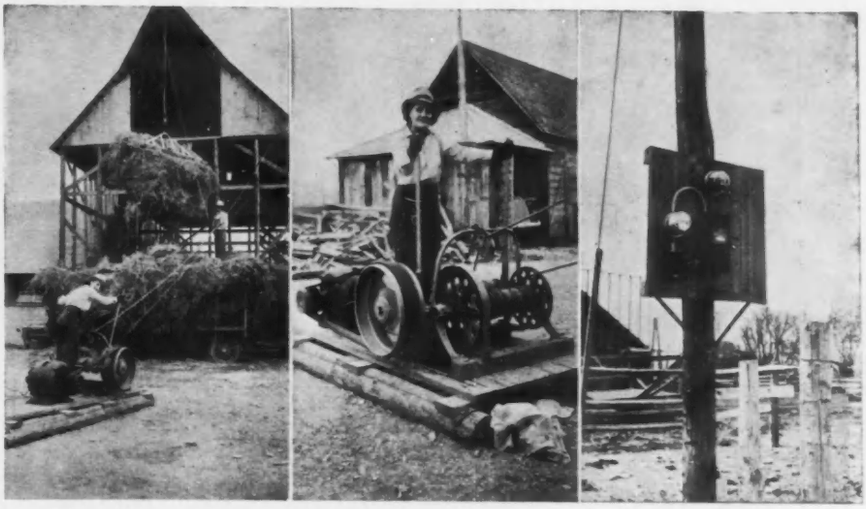
RUBBER GOODS:

1. One pair rubber gloves and protectors.
2. One rubber blanket.
3. Six rubber wire-sleeves.
4. Three rubber insulator hoods.

POLE MATERIAL:

1. 7,500-volt pin type insulators.
2. Soft drawn No. 8 tie wires (used because they are easier to demonstrate with).
3. 12-ft. pole mounted on stand and complete with two 4-pin crossarms, pins, braces, etc.
4. No. 6 and 8 H. D. bare copper wire.

Rural Lab Set up at Puyallup



How a portable electric motor saves time, money and energy on a modern farm is demonstrated by Edward Hoffman of Lewiston, Utah, on his dairy ranch which is served by the Utah Power & Light Co. Among the many tasks it performs is unloading hay into the barn. Operated by Mr. Hoffman's daughter, the motor-driven hoist keeps six hay wagons busy hauling hay from field to barn. At the right is the type of outdoor service installation used by the company in serving farm customers.

A NEW link in the chain of services which ties the needs of the farmer with electricity's ability to satisfy those needs was created by the Puget Sound Power & Light Co. last month, with the establishment at Puyallup, Wash., of an experimental laboratory. A part of the company's Farm Electrification Department, the laboratory will be available to the department's nine rural contact men, who, as they encounter new problems in the field, will submit to it those which require experimental solution.

The location at Puyallup, according to J. C. Scott, director for the department, was selected to permit the laboratory to work in close cooperation with the state's agricultural experiment station, also located there. Placed in charge of the laboratory was C. W. Wildebour, with Glen Cushing as assistant.

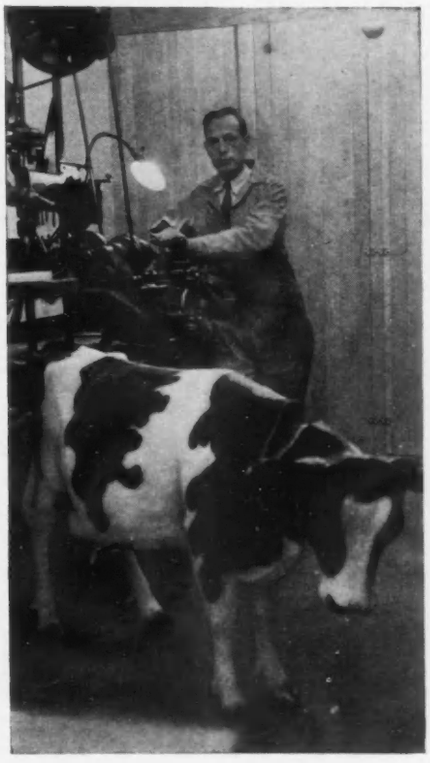
Although the department is already so organized that there is little danger of its losing the viewpoint of the farmer himself, a further precaution has been taken to keep the laboratory's attention rooted to the soil, prevent it from becoming an isolated, theoretical unit of research. Every two months Mr. Wildebour will cover one of the company's rural districts, working with one of the rural representatives, talking to farmers, keeping in touch with actual developments on the farm.

Even without such trips to the field, according to Mr. Wildebour, he is confronted with enough vital problems in rural applications of electricity to keep the laboratory busy for the next five years. To carry on this work, the laboratory is equipped with electrical testing instruments, and a light machine shop for the building of experimental devices.

Installation of this equipment conveniently coincided with the annual Washington State Fair at Puyallup, and in the first weeks of its operation the laboratory was called upon to develop attractive, educational, animated exhibits to fill the company's 20 x 168-ft. exhibit space. During fair week, Sept. 20-26, these were a source of attraction to large rural crowds.

Among the more novel exhibits were life-like plants which appeared magically out of the soil, as though growing, to visualize the benefits of electric soil heating, sterilizing and lighting. The laboratory even turned out animated cows, which "drank" electrically pumped water, and animated chickens, which scratched and presumably ate from an automatic feeder.

A fire hydrant fed by a ½-in. pipe visualized the disadvantages of inadequate wiring in the rural home, while kitchen and laundry displays emphasized how electricity can help women on the farm.



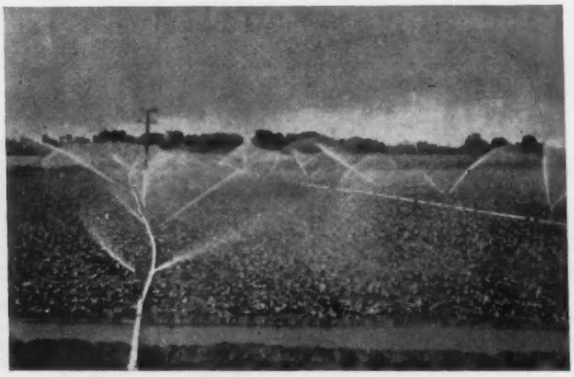
C. W. Wildebour, in charge of Puget Sound Power & Light Co.'s new farm electrification laboratory at Puyallup, Wash. The paper mache cow was born in the laboratory to perform at the annual state fair

An indication of what may be expected from the laboratory in the way of new developments is the record of experiments in which it already has had a hand. Its personnel has cooperated with the state station in studies of hay drying, and with the U.S. Department of Agriculture in experiments leading to announcement of the electric soil sterilizer.

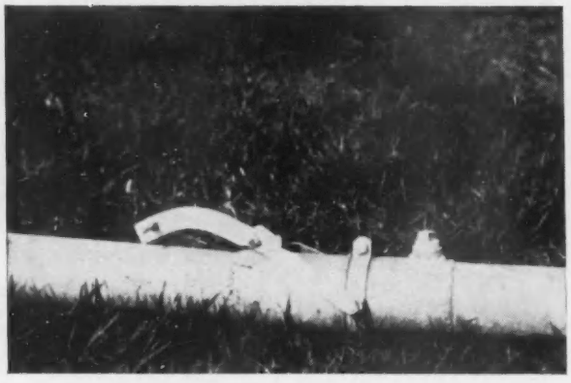
Recently it worked out a problem in tulip bulb drying, which led to installation of 40-kw. in heating units and two ¾-hp. blowers for Bonzonneveld of Washington. The laboratory's work convinced the Bonzonneveld organization that profitable conditioning of bulbs for growing, and control of drying rate to avoid skin cracks could be achieved through use of electricity.

Less spectacular and less measurable, but no less real, will be the value of the laboratory's availability to the rural representatives, in solving problems peculiar to the locality or even to an individual farm.

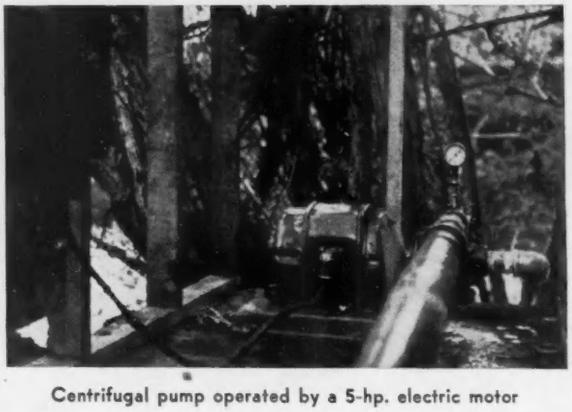
Rainmaker irrigated cotton on the Hotchkiss Ranch stands shoulder high



California sugar beets thrive under this double line operation

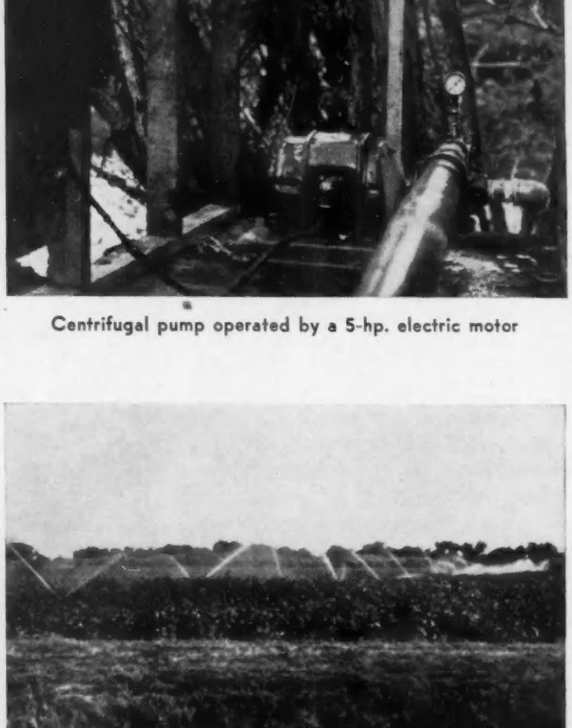


Rapid action coupling used with Rainmaker lines

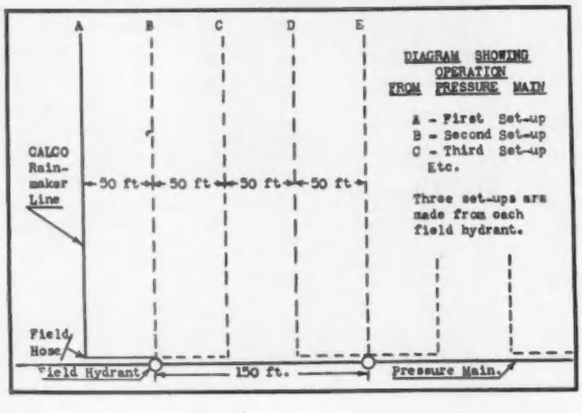


Centrifugal pump operated by a 5-hp. electric motor

In Oregon ladino clover is irrigated by the Rainmaker



Sprinkling cotton on the Hotchkiss Ranch near Firebaugh, California



Many new and profitable markets can be opened up because of the increased use of

Overhead Irrigation

OFFICIAL studies of the water supplies of the region constituting the western third of the United States show that the total amount of water available is very much less than that which would be required to irrigate those lands in the region which are otherwise suitable for agriculture. In other words, if all of the water which falls on the eleven western states in the form of rain could be impounded, the total would not come near equalling the legitimate demands for industry and domestic supply if to these were added the quantities needed for irrigating all of the otherwise available land. It follows that the conservation of the water resources will be one of the most important future activities of the western region.

These facts bring into great prominence a comparatively new method of irrigation which produces results in the form of abundant crops while using but little more than half the amount of water required for flooding or furrow irrigation. The overhead or sprinkling method resembles natural rainfall in that the water is deposited directly on the foliage and at the plant roots—not a foot or two below. As a consequence it is promptly absorbed by the root systems, and a much smaller portion is wasted.

Alkali Damage

One of the unfortunate features of irrigation by the usual methods in many localities is alkali damage. Water which reaches the plants from below, as in furrow and other subsurface irrigation, tends to dissolve alkali salts from the subsoil and bring them to the surface through capillary attraction. Evaporation re-deposits these salts at or near the surface, the location at which they will do the maximum of damage. Overhead irrigation works in the opposite way. It tends to dissolve the salts in the ground near the surface and carry them to lower depths. In this respect it is like natural rainfall, which, in humid regions, has long operated to dissolve and abolish the soluble salt contents of the soil.

In regions where there is little or no rain during the growing season, the foliage of most plants accumulates dust and dirt which tends to clog the pores. Overhead irrigation (again like natural rain) washes off these accumulations and leaves the foliage or the fruit in condition for healthy growth. Many insects and other pests are washed off the leaves and stems, resulting in partial or complete control. The most effective method for dealing with aphides in California flower gardens is that of hosing down the plants vigorously with cold water near sundown. The insects are washed off the plants and before they can regain their position on the stems and leaves their brief life span is over. The same thing is true of many commercial crops which are watered by the overhead system.

For most forms of gravity irrigation it is necessary to level and check the land so that the water may be evenly applied and retained on the culture plots. Ditches with proper outlet controls are also needed. All this is abolished when the sprinkler system is adopted because it works just as well on hilly or rolling areas as on level land. If portions of the land are higher than the water at the source, it is, of course, necessary to apply sufficient power to raise it to the additional height. The absence of ditches and the necessary turning spaces at the ends of plots conserves land for cultivation, and this cultivation is more convenient and rapid because of the absence of these obstacles and the ability to work on much longer lines.

Pays for Itself

Beets, peas and beans, potatoes and other row crops, small fruits, cotton and clover, and citrus fruits are the crops on which the "Rainmaker" system has thus far been most successful. Under favorable conditions the additional yields of many of these products are sufficient to pay the entire cost of the improvement in two seasons.

The overhead method is best adapted to those crops or localities where the natural rainfall supplies a large portion of the moisture needed, but where partial or complete drouth in the critical growing season often operates to cut down the yield to unprofitable proportions. Three or four inches of water applied by the sprinklers during these periods may easily make all the difference between success or failure.

One of the great advantages of the sprinkler system is the ability it gives the farmer to sow his seed with good prospects of germination whenever he thinks best. That is, if the ground is too dry to bring up the seeds successfully, he can wet it down to the required extent, either before or after planting.

In California the best time to sow table peas is November or December, but the farmer who is without overhead irrigation equipment cannot plant at that time unless fall rains have thoroughly wet down the soil. Sometimes rains do not occur until January when the most favorable planting time is past. With the soil wet down in November to a depth of 6 or 8 in., the peas will have made a good stand, will begin growing rapidly in late January, and the crop will be ready for market in February, when the demand is good and the prices are high. Such a crop is likely to be a financial success.

Overhead Sprinkler Equipment

Motors running from 2 to 40 hp., according to size and length of lines and necessity for vertical lift, are commonly employed for overhead irrigation. Several good makes of pumps are available. Supply lines leading from the pumps to the sprinkler lines on the field are best made of spiral welded pipe and usually are of 6-in. or larger diameter. On the land to be irrigated hydrants may be placed on the supply lines 150 ft. apart. The "Rainmaker" lines (3-in. or 4-in. galvanized pipe) are coupled to these. These lines consist of 20-ft. lengths of spiral welded, galvanized, pipe, with a special type of coupling which can be very quickly joined or disjoined. These couplings are integral with the pipe sections. Sprinklers are placed on risers 40 ft. apart, and these will water a strip of land about 80 ft. wide. One to three hours of operation are usually necessary, according to the quantity and penetration desired. Then the water is shut off, the line dissembled and removed to a new strip about 50 ft. to one side, and again put in operation. This process is continued to water the entire field.

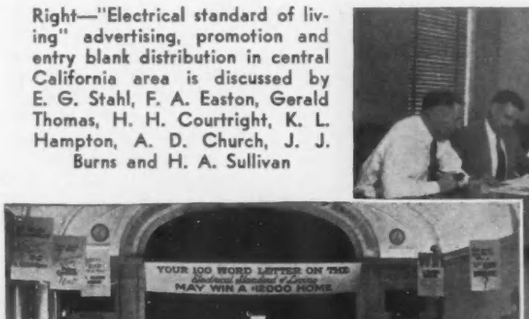
An average line, of say 800 ft. of 4-in. pipe, distributing hourly about 3/5 of an inch of water and served through a 6-in. line a thousand feet long against a total head of 100 ft. will require approximately 13 kw.-hr. to operate the pump each hour. Large acreages of high value crops call for continuous operation during the irrigation season.

Many farmers do as much as possible of their overhead irrigation at night. The foliage is in better condition to benefit from the application when it is cool, and there is very little evaporation. Power companies are interested in this aspect of the matter since night operation utilizes power at the times of lightest load.

Sales Parade

NEWS, METHODS, IDEAS, PLANS, COOPERATIVE CAMPAIGNS, RESULTS AND EXPERIENCE IN THE SALE OF ELECTRICITY AND APPLIANCES

Right—"Electrical standard of living" advertising, promotion and entry blank distribution in central California area is discussed by E. G. Stahl, F. A. Easton, Gerald Thomas, H. H. Courtright, K. L. Hampton, A. D. Church, J. J. Burns and H. A. Sullivan



Left—Employees of San Joaquin Light & Power Corp. and Valley Electrical Supply Co. assembled to hear details of the living contest. Similar meetings are being held in each of the utility's district offices in order to acquaint all 1,600 employees with the story

Fifty Western Utilities Join in Standard of Living Program

AN even fifty Western utilities are participating in the General Electric-sponsored "electrical standard of living program" which got under way late in September.* They are:

Arizona: Tucson Gas, Electric Light & Power Co., City of Wickenburg, Arizona Power Co. and Salt River Valley Water Users Assn. California: San Diego Consolidated Gas & Electric Co., Southern California Edison Co., City of Riverside, City of Burbank, City of Pasadena, Nevada-California Electric Corp., Pacific Gas & Electric Co., San Joaquin Light & Power Corp., Vallejo Electric Light & Power Co., Coast Counties Gas & Electric Co. and Bureau of Electricity, Alameda.

Colorado: Colorado Central Power Co., Home Gas & Electric Co., Public Service Company of Colo., Southern Colorado Power Co., Trinidad Electric Transmission Railway & Gas Co. and Western Colorado Power Co. Idaho: Idaho Power Co., Teton Valley Power & Milling Co., West Coast Power Co. and Bunker Hill & Sullivan Mining & Concentrating Co.

Montana: Montana Power Co. Nevada: Elko-Lamoille Power Co. New Mexico: Albuquerque Gas & Electric Co., Las Vegas Light & Power Co. and New Mexico Power Co. Oregon: Eastern Oregon Light & Power Co., Yamhill Electric Co., Pacific Power & Light Co., California-Oregon & Mountain States Power Co., Northwestern Electric Co., West Coast Power Co., Portland General Electric Co. and Molalla Electric Co.

Utah: Southern Utah Power Co., Telluride Power Co., Utah Power & Light Co. and Uintah Power & Light Co. Washington: Grays Harbor Railway & Light Co., Washington Water Power Co., City of Tacoma, City of Seattle and Puget Sound Power & Light Co. Wyoming: Sheridan County Electric Co., Cheyenne Light, Fuel & Power Co. and Rawlins Electric Co.

Divided into two parts, the program is designed for those who are building or modernizing their homes and those who are merely interested in electrical living. Approximately $100,000 in prizes will be given away by local and national sponsors to the persons who do the best building or modernizing and to those who can best describe why electric living appeals to them. The first phase of the contest ends Oct. 31, 1938; the second, Dec. 4, 1937.

* Electrical West, October, 1937.

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NEW MODELS of Frigidaire's electric ranges and refrigerators are scheduled to make their appearance within the next several weeks, it was announced late last month.

Radio Campaign

New Ideas for Selling Sets Feature S. F. Meeting

The interrelation of the various parts of the industry and new ideas for selling more sets featured speeches at the San Francisco meeting of participants in the northern California fall radio sales campaign. Sponsored by the Pacific Radio Institute and the Electric Appliance Society of northern California, the dinner was held Sept. 29, eleven days prior to the opening of the three-week drive.

Discussing the personal nature of radio, William B. Ryan, newly appointed sales manager of NBC in San Francisco, said that listeners have now come to feel that they own not only the set but also the program. In seeking a sale, therefore, dealers should study both the program preferences of their prospects and the program structure of the radio station and direct the sales at these points.

The interrelation of distributor and dealer was the subject of E. M. Frellson, district appliance sales manager of the General Electric Supply Corp. Distributors, he said, serve as purchasing agents, warehousemen, financiers, service and sales counsellors for the dealers. They offer sales promotion assistance and act as the mouthpiece of the dealers to the manufacturer. A common objective—to sell the public—keeps both in business, he said.

Relating his experiences in investigating the salesmanship of various dealers and salesmen, Elliott Epstein, attorney, told how one dealer had solved the old set trade-in problem by suggesting that the customer would get more from his set by using it in his children's room than he would in taking an allowance on his old set.

Further ideas on trade-ins were given by Toastmaster Ernest Ingold, former Atwater-Kent distributor, who pointed out that automobile agencies must sell 1.6 used cars to every new car in order to stay in business. "The dealer who can create a market for the old sets he can take in will develop a new set sale in proportion to the sale of the old sets," he said.

Hugh M. Crawford, general sales manager of Pacific Gas & Electric Co., outlined the details of the campaign, which embraced an advertising outlay

by both distributors and utility of over $100,000 and pledge of free broadcast time on radio stations. Covered by the campaign fund were the cost of bill-stickers to 200,000 domestic customers of P. G. & E., cooperative radio displays in 73 power company offices, utility advertising of radios in 285 daily and weekly papers, use of slides in 72 small town movie theaters and a number of smaller items.

Other speakers were Frank Runyan, managing director of the Western Furniture Mart; V. Ford Graves, chief inspector of the Federal Communication Commission for the district, and Arthur Halloran, former editor of Radio.

George H. Eberhard, president of the Pacific Radio Institute, presided at the meeting. Arrangements were made by Arthur Rowe, managing director of the Institute.

Special feature of the campaign, as announced shortly after the dinner meeting, revolved about a hitherto frowned upon practice—that of home demonstrations. Acknowledging the fact that steps have been taken in many communities to stop the practice, the retail division of the campaign planning committee nevertheless pointed out that "inasmuch as most people are quite well satisfied with the radio they have and home demonstration is the only means by which proof can be given that the new 1938 High Fidelity Radios are different and will do the things claimed for them, it seems advisable that all retail dealers advertise that they will make home demonstrations during this campaign."

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Fifth Annual Electrical Show to be Held at San Diego

San Diego County Bureau of Radio and Electrical Appliances, a cooperative dealer organization, will hold its fifth annual Christmas showing of electrical merchandise at the Palace of Better Housing, Balboa Park, this year, J. Clark Chamberlain, executive manager, has announced. Last year's showing attracted 86,000 visitors.

Admission to the event will be free and participation will be open to manufacturers, distributors, dealers, or other representatives having exclusive electrical equipment to display. New decorative ideas are being developed and a fine assortment of prizes is assured. An aggressive advertising and promotional campaign is being planned with a number of novel crowd attracting features.

In previous shows the space has been sold out before the opening day and it is expected that the same will be true this year. A similar scale of charges for the space, a low one based on actual cost, has been promised this year.

ELECTRIC RANGE
ROUNDUP CAMPAIGN
WATER HEATERS
AUGUST 1ST TO SEPTEMBER 30TH
THE TIME'S ALMOST UP!
Because your prospects they'll help you go over the top 100 POINTS
HERE'S THE STANDING AS THEY APPROACH THE HOME STRETCH
"CALL-BACKS" MAY GIVE YOU SOME GOOD HOT PROSPECTS
TRY THEM
It looks like the is going to be a big party, with lots of fun for everyone and nobody wants to stay at home / It won't be long now — SO-O-O-o-o HOW ABOUT YOU ALMOST THERE BOY?
USE YOUR QUIRT AND SPURS AND GET INTO THE CORRAL BEFORE THE GATE IS CLOSED.....

To stimulate interest in the range-water heater campaign, P. G. & E. circulated drawings such as the one at right among company salesmen. Pictures like those above, showing the successful salesmen at play, plus motion pictures of the same subject, will be used to stir up enthusiasm for the new lighting campaign which is to be climaxed by a week-end snow party in January

P. G. & E. Starts Three-Month Lighting Campaign

So successful were results of the August-September electric range and water heater campaign that Pacific Gas & Electric Co. last month established a new precedent for itself by inaugurating a three-month lighting campaign.

Scheduled to end Dec. 31, the new drive will offer to company salesmen the inducement of a weekend snow party in the mountains. Awards will be made on the basis of each division's completing its 1937 lighting quota. For example, if a division having a quota of 1,000 lamps was 100 lamps short of the mark on Oct. 1 it is required to sell the remaining 100 in the last three months of the year. Effect is to penalize the division which has fallen behind, stimulate the division which has kept plugging ahead.

This is a change from the range-water heater campaign requirements. For the most part, however, the two campaigns are similar. Both are a departure from the former practice of offering to salesmen prizes of either cash or an occasional get-together at a hotel.

Main award to company salesmen who met their 100-point quota in the last drive was a three-day trip to a dude ranch in Potter Valley. Lesser awards were, in addition, a rodeo shirt to every salesman scoring 100 points, shirt and hat to salesmen scoring 120 points. Points were scored on the basis of three for every sale made for the company, two for every sale made for the dealer. Ranges and heaters counted equally.

Results of the drive, by means of which 32 men won a trip to the ranch, were two: First, creation of a better spirit among the men; second, a 40 per cent increase in sales.

Most affected by the drive were the dealers. Although no special sales offer which would especially interest the dealers in participating was made, dealer sales showed a two to one edge over company sales.

High man among winning salesmen was R. I. Mackie of the San Joaquin division; second was W. C. Donahue of the Drum division. Art Miller, merchandise manager, was in charge of the campaign and trip.

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Utah Power & Light Co. has issued to its rural salesmen an inch-thick, loose-leaf farm electrification manual designed to provide "in a readily usable form facts and data on all of the manifold electric devices and uses of electricity on the farm." Confined to farm appliances exclusive of those used in the house, the manual is designed for continued expansion, the salesmen being urged to inclose all new pages issued by the company. Information includes surveys, specifications of appliances, selling points, names of county farm agents, vocational agricultural teachers, dealers, etc., and is assembled from company files, university bulletins and commercial literature.

HOW CAN I—

Get competitors to cooperate and eliminate wasteful selling practices?

Receive better help from jobbers, manufacturers?

These are the last of nine problems posed by Western dealers and salesmen in response to a questionnaire sent out by Electrical West some months ago (see Electrical West, Sept. 1937, p. 28).

No one—not even the most experienced of salesmen—can give a definite answer. One man starts business with a set theory in his head and sticks to it to the end. Another man tries a variety of theories before he finds the one that works. Yet another experiments and experiments and experiments—and still reaches no conclusion.

That's why the 200 or more advisory editors chosen by Electrical West to offer their solutions fail to reach absolute agreement. On the surface they may seem to, but certain words and phrases denote a subtle difference. Yet if you take them as they stand, analyze them, then lump them together you will get a picture which comes close to being the answer you want.

How Can I Get Competitors to Cooperate and Eliminate Wasteful Selling Practices?

Work closely with dealer organizations, exchange views as to what constitutes fair practice and when you state what is your policy always keep your word in all the term implies.

Cultivate their friendship; appeal to their fairness and sportsmanship for mutual good.

Get dealers' associations' acceptance of merchandising code and abide by the terms set up.

Hold frequent dealers' association meetings and carry on cooperative endeavors in campaigns, displays, advertising, etc.

Know them; get them to know you.

Promote the idea of all dealers taking an industry viewpoint rather than an individual viewpoint.

Present a cost analysis record to competitors and show them the fallacy of unsound or wasteful selling practices.

Discuss with them plans for eliminating wasteful practices.

Don't compete on price; compete on quality and service.

Secure passage of a law with real teeth and 100 per cent enforcement behind it.

Stick to good, sound, fair business practices yourself.

Enlist the help of your distributors or wholesaler.

Instill confidence in and between others.

Don't get too interested in what your competition is doing.

Convince them there is room for both of you —if there isn't, you can't.

Don't be stampeded by unethical competitive practices; maintain a dignified, dependable reputation.

Prompt service and sincere interest in the welfare of your customers offsets wasteful practices.

Set a good example yourself.

Concentrate on building your own business; don't worry about the bad practices of some one else.

Get the assistance of the public utility; it can through force of example and through operation of a dealer cooperative plan be a stabilizing influence.

Don't fight your competitors.

Tell them how pure you are yourself.*

*More answers from our fun-loving advisory editor. But don't they hold water?

How Can I Receive Better Help From Jobbers, Manufacturers?

Operate your business aggressively in order to make it possible to build a larger and more profitable business; support the sales plans offered you.

Be loyal to your wholesaler and manufacturer.

Ask for sales help in the form of advertising material and sales training; be sure to use this when it is supplied.

Take full advantage of all their sales helps.

Don't handle too many lines.

Acquaint yourself thoroughly with their lines and selling practices.

Convince them that you mean business.

Full cooperation, fair treatment.

Be fair in your representation of their lines.

Welcome their salesmen and representatives. Take time to hear and give thought to their ideas.

Pay bills promptly.

Discuss your problems with the key men of those organizations.

Do your part.

Operate a square, honest business.

Assume the sales and service obligations that are inherently a part of your responsibility; don't pass the buck.

Extend as much confidence in your supplier as you expect him to extend to you.

Show more interest in their products.

Do business with the better jobbers and manufacturers.

Don't try to chisel prices.

Concentrate on one line on each appliance.

Concentrate selling efforts on all-products line.

Make no claims on them that are not fair and reasonable.

Confine purchases to those jobbers and manufacturers whose policy conforms to good business.

Register legitimate complaints, but don't harass and chisel.

Abuse the road salesman.*

Wyoming Firm Sells Service to Build up Trade

THE State of Wyoming is pretty thinly populated. The town of Evanston isn't any too large either. But when an electrical appliance dealer located there modestly reports that "we feel justified in believing that we have made some little progress since entering into our partnership" then you can be pretty sure there was some method behind the business.

That method, as described by Partner Gerald Cazin, was selling service and not mechandise. On this basis, Cazin & Houtz has become a leading factor in the Evanston electrical world.

"Probably the greatest problem in merchandising institutions is that of competition," Mr. Cazin says, "Competition we have divided into two classes —fair and unfair. Fair competition would present no problem to any person interested in his work and reasonably experienced in its performance. We do, however, attempt to minimize the disheartening effect of losing a sale to a competitor by attempting to remain on the friendliest of terms with all of them. This, of course, involves offering only fair competition.

"At the present time we are using our service department to assist us in gaining what we feel is fair advantage over our competitors. We do this by offering those who do not have such departments and are in good financial standing the use of ours. This is done on a 30-day basis.

"The competitor takes the repair job in his store and delivers it to us. We bill him in confidence at a lower figure than we charge our customers and he can demand what he pleases. We only ask that he charge a price which equals or exceeds ours to him. We feel this is justifiable because we are obliged to handle only one account.

"Because this service at times involves us with the customer we feel that eventually our service department will be appreciated to a point where we will receive additional merchandising business from this customer direct. It also gives us a check on conditions of customers' appliances, their ages, etc."

The second phase of the problem, that of dealing with unfair competition, is more difficult. But again Cazin & Houtz emerged on top.

When the firm started in business, limited finances prevented it from meeting price cuts by unfair dealers. So, once again, feeling that the salesman who could convince his customer he offered more than mere merchandise could demand and get a higher selling price for merchandise, the two partners turned to their service department. Selling service instead of merchandise became their policy. It was not a washing machine which was sold but a washing machine service; not a refrigerator but a refrigeration service.

What were the results? Additional expense in some cases. But also a sufficient margin of profit—a margin of profit which promises to grow larger every year.

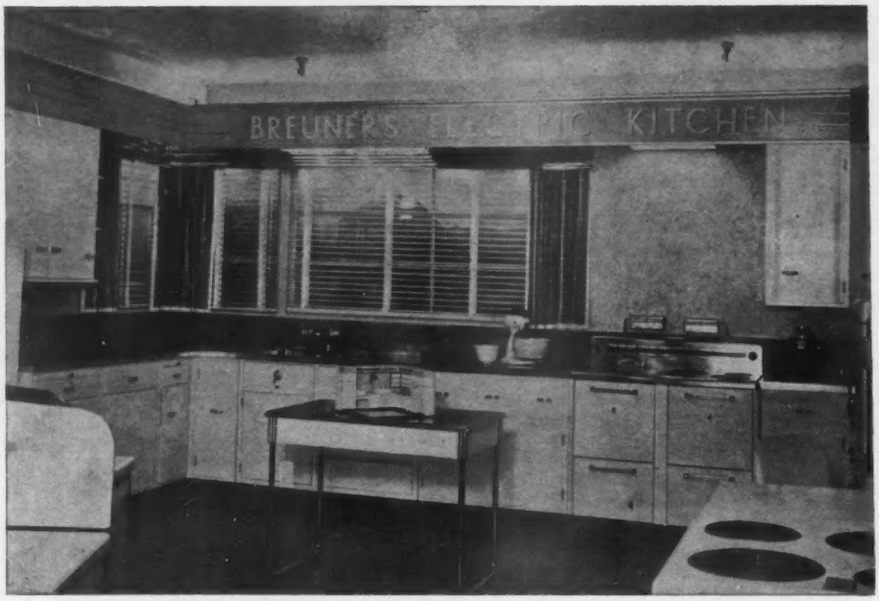
To this showroom Alvin Zeff, Modesto, Calif., Hotpoint dealer, attracted 3,000 women following recent announcement that a gardenia would be given to adult women visitors

It was all because they found what many dealers offering high-pressure salesmanship have overlooked. They found—from personal experience, too, because both Mr. Cazin and Mr. Houtz are able to service electrical equipment —that the man who came to the back-door in overalls and repaired an electrical appliance could more easily convince the housewife that the purchase price offered was the gospel truth than the white-collar salesman who came to the front door and talked glibly.

"Of course," Mr. Cazin admits, "there are a number of small difficulties we have encountered. Some we have solved, some are yet to be solved. But these are things of no importance and depend upon the initiative of the individual concerned. Whether our policy will prove of value to anyone else we do not feel qualified to say, but right now it is proving successful with us."

So Messrs. Cazin and Houtz, with their selling of service, are winning their way.

Air conditioned, well lighted, spacious, and attractive is the new sales and showroom floor of General Electric Supply Corp.'s new building at 1131 F St., Sacramento, Calif. Offices for the salesmen and manager, Ralph W. Hunting, as well as separate display rooms for small appliances, radios, and wiring supplies and switchboards, are at the rear. The long service counter gives access to the warehouse at the rear and provides a convenient place for customers to do business. Complete display of appliance stocks occupies the main floor



Center of attractiveness at Breuner's, in Oakland, is the electric kitchen, Westinghouse equipped, and arranged with the recommended preservation, preparation and cooking centers. On the appliance display floor, this kitchen faces the elevators and is a center of interest both for floor sales and for cooking classes

Electric Washer Sales Hit New High in Spokane

Aided by a laundry strike which closed most of the city's plants, dealers and the Washington Water Power Co. sold 1,250 electric washers in Spokane during August and September. This was a new high mark for local sales.

Paralleling this success was a large sale of secondhand washers, electric irons and ironers. Some dealers reported that they had doubled their sales of home laundry equipment during the period.

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TO DISPROVE THE GENERAL BELIEF that soap-suds and water must soil every laundry, the Bon Marche at Seattle recently startled shoppers with the spectacle of a washer running at full tilt while standing on an expensive rug in a living room.

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COMBINATION SHOWINGS of electrical vacuum cleaners with rug and carpet displays are recommended as a new kind of joint promotion by the Vacuum Cleaner Manufacturers' Assn.

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ELECTRICAL APPLIANCE DEALERS and distributors were last month able to back up local selling campaigns with nationally distributed information when the November issue of McCall's Magazine carried to its 2,741,782 women readers page-length articles on roasters and better lamps.

UTAH POWER & LIGHT CO.'s lamp bulb campaign closed Sept. 25 with 144.5 per cent of the quota reached. All eleven territorial divisions of the company attained the mark set, one of them even reaching 378.1 per cent. Results, as compared with the 1936 campaign, showed a 50 per cent increase in carton sales, a 65 per cent increase in wattage sales.

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Previews of G. E. Radios Held for California Dealers

Preview meetings to permit dealers to see the complete 1938 line of G. E. radios and to offer them a special feature set equipped with touch tuning to retail at $109.95, were staged by the General Electric Supply Corp., San Francisco, in Fresno, Sacramento, San Francisco and San Jose during October. Cy Frellson, merchandise manager, conducted the sessions and presented the sales appeal story of the line and of the special feature number being offered to the trade. Not only dealers but also their salesmen attended these presentations, bringing the attendance in each case to sizeable proportions—Fresno 50, Sacramento 80, San Francisco 225, and San Jose 50. Charles Goodwin presided at the San Francisco meeting; Bob Zaring presided at Sacramento.

The introduction of the line in northern California coincided with the Electric Appliance Society campaign.

Better Light Campaigns Started by Four Utilities

The rapid approach of winter, season of less sunlight and more confining weather, was the excuse last month for the launching of better light campaigns by at least four utilities in the West.

"Light Conditioning" was the keynote of Northwestern Electric Co.'s drive to make a reality this year's estimated sale of 18,000 lamps. This would be an increase of approximately 2,500 lamps over last year's sale.

Utah Power & Light Co., having started its Better Light-Better Sight campaign Sept. 25, swung into intensified action with the announcement that "The Electro Dealer", utility dealer paper, was offering six cash prizes to dealers who have outstanding floor and window displays. The prizes are to be offered at the rate of two a month throughout the duration of the three-month drive.

El Paso (Tex.) Electric Co. inaugurated an I.E.S. Lamp-Employees Selling campaign offering prizes and cash bonuses to all utility employees who made sales. Awards included a bonus of $1.25 per lamp sold at list price for cash; $1 per lamp sold at list price on terms; choice of $5 or an I.E.S. lamp valued not higher than $8.95 to each employee who sold ten or more lamps; a first prize of a $74.95 radio to the employee selling the greatest number of lamps and a second prize of a $42.95 radio; a $42.95 radio to the employee arranging the greatest number of demonstrations; a $74.95 radio to the team reaching the highest percentage of its quota of five lamps per employee, and a $42.95 radio to the second-place team.

B. C. Electric Railway Co. stressed the "eye-strain season" in its home service news bulletin and urged homeowners to consult the company's home lighting department for advice as to how to correct inadequate lighting.

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A WIDESPREAD RESPONSE which surprised even the sponsoring Washington Water Power Co. and the Better Housing Bureau was one of the results last month of the Spokane kitchen planning contest. During the first week the supply of die-cut cardboard kits furnished the contestants so that they might more easily fashion their models was exhausted. A 200-word essay on "Why I Want a Modern Electric Kitchen" was required to accompany each model.

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CELEBRATING THE FIRST DAY of its 51st anniversary with a special washer sale, Hennessy's of Butte, Mont., sold every washer on its floor before 10 o'clock the same day.

Set the Table --- for Demonstration

It is worth while, even in a crowded store or floor space to set aside a place for a decorated, fully set, buffet table with electrical appliances appropriate to the meal. A dining table is to be preferred. It should be covered with an attractive tea cloth or table cloth • For a breakfast buffet table use a checkered or colored table cloth in bright colors, with neatly folded napkins that match, and with bright colored dishes, silverware. Arrange a hostess tray with toaster and jams. Set up a buffet warmer to illustrate its use for keeping cereals warm. The coffee maker or percolator should be with the cups and saucers. Have a grill for toasting sandwiches. Print up breakfast buffet menus suggesting combinations possible • For luncheon buffet table set-up have a jelly aspic salad ring on the table, cookies and crackers, soup cups, dinner plates • For a dinner or supper buffet table use a more formal table cloth, more formal dinner dishes, a salad bowl or ring aspic salad, bowls of fruits, mints and nuts, olives and relishes, a cake, appropriate dishes and silverware. Set the buffet warmer, chafing dish, toaster, sandwich grill, coffee maker on the table • Menus can be prepared and printed in an attractive manner either by a printer or by mimeograph. Use the buffet entertaining booklets available from manufacturers of appliances or from the Electrical Housewares Promotion Committee of the Edison Electric Institute and N. E. M. A. • In holiday seasons, decorate the table appropriately for Hallowe'en, Thanksgiving, Christmas, a Football Party, New Years, Easter, Valentine's Day, Fourth of July, a wedding breakfast, etc. A hostess in charge of the table to answer questions, suggest ideas, and make sales will help you to cash in on your table cookery display and demonstration

ELECTRICAL WEST COOPERATIVE

APPLIANCE SALES GUIDE

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Talk Hostesship,

Sell Table Appliances

- Buffet entertaining is a modern way to be hostess and yet enjoy your own party too
- A large number of guests may be served without servants, and but little work
- An attractive buffet table is a fit setting for food
- No other sort of entertaining is so gay, so flexible
- Table is set with good things to eat, people go to the table, help themselves to whatever they like, choose where to sit and with whom they wish, and it is all friendly, informal, simple
- No need to experience that last minute hurry. Leaves you plenty of time to make yourself beautiful and do justice to that new gown
- Needless steps are saved
- Cook just enough to suit the occasion, serve piping hot
- Ideal for a buffet breakfast or before or after golf
- Quick start on a sight seeing trip with visiting friends, or a quick meal to come home to at luncheon or after theatre supper
- Extra sleep in the morning after an evening out and husband has no difficulty getting his own breakfast
- Appliances add sparkle to the well arranged table
- Every appliance serves many purposes, has a list of interesting recipes that add variety to the menu
- Good quality appliances last for years and give daily service
- Simplifies meal planning
- Cooler cooking in summer
- Method the same, results are always uniformly good
- No watching needed with the modern automatic features

November, 1937

TABLE COOKERY

No. 11A---Table Appliances

SHORT SALES TALKS That hurdle Sales Resistances

EVERY SALESMAN, during the course of presenting the good features and the services which may be expected from an appliance, is faced with difficult sales resistances, obstacles which the prospect throws in his path to delay buying or permit more shopping around. The good salesman is quick to recognize the true motive behind these objections, and to meet them with positive sales suggestions that help the prospect decide to buy. In this Guide, Bill Smith shows how to overcome the most common obstacles. Naturally he illustrates only such sales resistances as do not involve specific product detail to answer, but which will help any salesman out of a tough spot. Notice how Bill Smith, the successful salesman, meets the following obstacles. Then use them if they are thrown across your own path.

When the Prospect says:

***Prospect:* "I have one already, thanks."**

MOST salesmen will take this as a final answer, back away and fail to find out important facts which may yet bring a sale. Note how Bill tactfully follows through to learn more so that he may proceed on the basis of that knowledge.

BILL: "Have one already, that's fine. Then you know from experience how useful this appliance is. What make and age is it, may I ask? I am always glad to learn what experience a person of your very evident good judgment has with this appliance."

SEE what Bill has done? He has paid a compliment to a user for using an electrical appliance, and has made it easy for the prospect to tell him the make, age, and condition of her appliance. Even if she registers a complaint about it, her reply will enable him to connect the services and improvements in the new appliance to her specific experience and problems. Then he can follow up with:

BILL: "Have you ever thought of the pleasure you would have from entertaining a group of friends, at a luncheon or a breakfast completely from the table, never having to leave them for a moment to go to the kitchen? That would mean adding to your present ..... its companions, the ..... and.....(*naming the appliances missing from a matched set*). With them you could serve fresh, deliciously crisp toast, just the thing for hors d'oeuvres or dainty sandwiches, or a snack, and fresh flavored coffee, piping hot, and from the grill crisp bacon or griddle cakes, or toasted sandwiches. Many of my customers used to wish that their appliances matched a little better, and now we are fortunate in having matched sets of table appliances. You will notice how nice they look together on the table here with their single decorative idea carried to each appliance. Wouldn't you like to complete your set, or if you prefer, why not start with this new and attractive matched set which will not only give unity to your table decoration when you entertain with a buffet luncheon, but bring you the added convenience of watching the food for you by means of automatic temperature control?"

When the Prospect says:

***Prospect:* "I had one once, but it didn't work (or wasn't satisfactory), so we seldom use it any more."**

BEFORE the salesman can proceed with such an answer he must find out why the appliance proved unsatisfactory, whether because it was too cheap, used improperly, was underwattage, or of poor design.

BILL: (*sympathetically*) "It was unsatisfactoy? That is too bad. I wonder if you would tell me just what seemed to be the matter? Perhaps I could suggest something that would make your appliance give you the service and the convenience it was intended to give. Unfortunately some of the earlier appliances, like the early cars, though the best of their day, were not up to today's models. So much has been learned about electricity in the last few years, and such knowledge is now built into appliances. Tell me just what it was you found unsatisfactory."

NOTICE how Bill has paved the way for her to tell him a good deal about her appliances, and her own habits in using them? He will then be better able to isolate the cause of her complaint and by showing how an up-to-date model solves the problem, sell her both on the appliance and on trying again. After he has learned the cause he proceeds to sell her again on what the appliance can mean to her comfort if she will use it.

BILL: "From what you have told me I am impressed that you would not let that one disappointment deprive you of the pleasure of being able to be a guest at your own table, of the reputation you can have for clever entertaining with attractive buffet luncheons or suppers. And I feel sure that if you are like Mrs. Smith, my wife, that you will appreciate the opportunity table appliances give you to have a little longer sleep some morning after you've been up late and

your husband must hurry off to work or wants to get an early start to a game of golf. You can set the table with these appliances and he will find it no trick at all to get his own breakfast right at the table while he is reading his morning paper. Suppose I send you one of these new matched sets that will start you off on a new experience, a really satisfactory one with electric table cookery?"

When the Prospect says:

***Prospect:* "It is so much bother to get these appliances out and clean them up after a meal. I don't think I would use them enough to justify the outlay."**

THIS type of objection usually indicates that the woman has her habits so well established that she does not want to change to the new way of doing things. She will be a hard one to sell unless she can be thoroughly convinced that it is to her advantage to make the effort to alter her housekeeping methods. Bill does not argue, you see. He recognizes that she is satisfied with her own way and uses that fact.

BILLS "So much bother? I can well understand how that might be objectionable. It is easy to see that you have thought carefully of this point that is most important to any woman and I am sure you must run a very efficient household. Really that is the aim of the manufacturers of these appliances too. Every one of these time and effort-saving appliances has been so much improved during the past few years that there is nowhere near the bother to them that there might have been at an earlier time. These new hard, and practically scratch proof finishes take only a simple wiping with a damp cloth to clean. Their polish is quickly brightened by a minimum of rubbing. They are so attractive to look at, are so simple in styling that they enhance the table and really do not need to be put away any more. It is so much more convenient just to leave them in place, attached and ready to use that many people employ them that way. You will be surprised how handy they prove when they become so familiar that you never think twice about taking them from a shelf because they are ready on your table all the time to make toast for breakfast, or for dainty hors d'oeuvres; or a hot cup of coffee to refresh you most any time you feel a bit fagged. They will relieve you of lots of bother, and fixing too, if you decide to serve your visitors informally as is done so much more nowadays. Buffet suppers are not half the trouble as a big dinner—why your guests enjoy serving and cooking a snack themselves, with you there unworried as a guest too. Everyone has a much better time, it seems to me, that way. Let me send out one of these attractive, easily cleaned, bother-saving matched sets of table appliances so that you can begin to find the freedom that they bring to an intelligent and efficient person like you."

When the Prospect says:

***Prospect:* "But they cost too much to operate."**

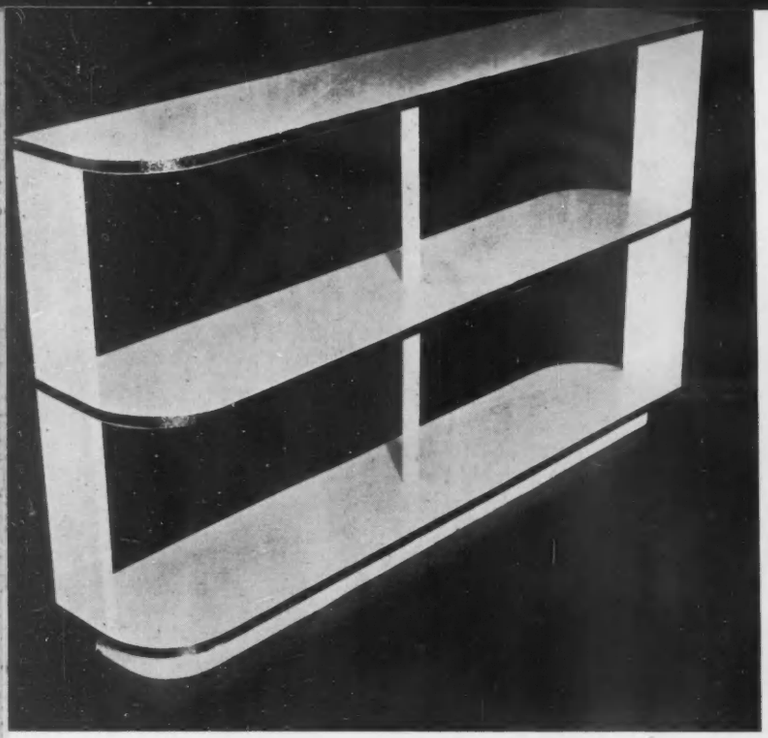
EASIEST and most costly mistake a dealer or salesman can make is that of agreeing with such a thought. If you do, it forever afterwards makes cost of operation an obstacle to the purchase of anything you sell. Yet it would be equally foolhardy to argue about such an impression or belittle it. That would only drive the prospect to defend her position at all cost. Notice how Bill faces and overcomes this common misconception as to cost of operation.

BILL: "Cost too much to operate? I can appreciate your prudence in being concerned over that. How far you stretch your household money is mighty important to you and you want to get your full dollar's worth. That is what I like about electricity. When we stop to analyze it, I know of nothing where we get so much value for our money as we do with electricity. Take this appliance here as an example. It will save you lots of time in the preparation of breakfast—in fact you can serve the entire breakfast right at the table without needing to arise and prepare for the others in your family. More than that, it can be so useful in serving a buffet luncheon or supper, giving you quite a reputation I assure you, as a clever hostess, that you will find yourself using it every day without a second thought, and a whole month's use will cost less than the tickets to a movie. I don't know where else we get such a bargain as that, do you? Why not take advantage of this real, every day bargain right away. It is so cosy to cook, serve and eat a meal with your friends and family right at the table."

NOTICE that in each case Bill kept reminding his prospect of the pleasure she would get from the use of her appliances, of their convenience and service to her. These sales points are the best way to overcome any and all obstacles. They do the job for the salesman. All he needs to do is to introduce them tactfully and let them do the work.

CALIFORNIA OREGON POWER CO. · PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. · PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. · IDAHO POWER CO.
NORTHWESTERN ELECTRIC CO. · WASHINGTON WATER POWER CO.
UTAH POWER & LIGHT CO.

for Small Appliances



Use Versatile Open Shelves . . .

●

Handy tool for small appliance display is the open shelf, similar to that illustrated here. A pair of these can be used in a hundred different ways. Simple to make or have made, they consist of three 12-in. boards, rounded on opposite ends, supported by end-pieces as shown, with a round wood or shining metal center rod support. A kick space at the base prevents scuffing. Metal trim on the edge of the shelf gives it a bright accent.

●

Placed against a background of colored corrugated cardboard as shown in the pictures at top and center, right, it makes an easy and quick, yet effective small window display. Or in a big window, like that below, a pair can be made to balance a center display poster or idea piece, (like the chimney for Christmas)

●

On the floor two can be backed up against each other and furnish an attractive center of the floor display table. Four can be arranged in a hollow square for a demonstration of appliances or a special sales counter or "island."

APPLIANCE

Nove

S. F. Mart to Hold Open-House Evenings

The problem of attracting the small, one-man dealer to the Western Furniture Exchange and Merchandise Mart, San Francisco, was long one which puzzled Mart officials. Large dealers constantly thronged the exhibits, but even the addition to the original Mart of the radio and appliance, housewares, lamp and giftwares divisions had made no difference in the attendance of the little fellow. What, the officials asked themselves, was the trouble? Did the little fellow stay away because he felt he could gain nothing, or did he stay away merely because the exigencies of his business forced him to?

Answer was found Oct. 15. Hoping that the trouble lay only in the latter hypothesis, officials declared Radio, Appliance and Housewares Day and for the first time in Mart history held the doors open until 10 p.m. The problem was solved. Over 600 appliance dealers entered the building. Good proportion of them came in the evening and were recognized as small dealers who had previously been unable to attend during the day because they were needed in their stores.

Result of the experiment's success was made known soon after the crowd had finally departed. Henceforth, the announcement read, the Mart will be open the third Friday evening in each month.

"But please, Mr. Parmogast, next time you feel a sales idea coming on couldn't you see your way to giving our purchasing department a little warning?"
SMITH ELECTRIC
APPLIANCES
SALE

UNDER THE SLOGAN "Hollywood Goes Royal", the P. A. Geier Co., manufacturers of Royal vacuum cleaners, instituted a sales promotion campaign built around three 20th Century-Fox actresses and tying in with local dealers and neighborhood theaters who distributed coupons and donated a Royal cleaner to the lucky winners.

APPLIANCE SALES REPORT

A Summary of Dealer and Utility Reports Compiled by Associations, Societies, Bureaus, or Dealer Contact Departments of Utilities

	Sept., 1937	L. A. Bureau of P. & Lt.[1]		Idaho Power Co.[2]		P. G. & E. Co.[3]		San Diego Cons. G. & E. Corp.[4]		San Joaquin Lt. & P. Corp.[5]		Southern Calif. Edison Co. Ltd.[6]		Utah Power & Lt. Co.[7]		Wash. Water Power Co.[8]	
		Current	9 Mos.	Current	9 Mos.	Current	9 Mos.	Current	9 Mos.	Current	9 Mos.	Current	9 Mos.	Current	9 Mos.	Current	9 Mos.
APPLIANCE	Ranges	580	4,911	287	3,835	423	3,201			105	1,338	578	5,423	369	3,649	217	1,769
	Water Heaters	166	1,299	159	1,820	216	1,914			47	678	197	2,092	74	1,404	198	1,504
	Air Heaters, aux.	64	965	42	411	86	6,386			25	259	103	2,061	3	918	138	826
	Air Heaters, 220	50	263			133	842			63	624						
	Refrigerators	2,523	32,167	249	5,142	4,362	39,567			289	5,656	3,092	42,199	1,144	8,982	382	7,004
	Dishwashers	19	87	291	2,915	41	164			2	32			5	42	1	7
	Washers	1,952	15,728	291	2,902	2,965	24,333			382	3,186	2,803	25,655	757	7,292	690	4,639
	Ironers	316	2,610	30	344	649	5,624			56	545	444	4,005	63	440	74	427
	Vacuum Cleaners	550	4,974	77	980	2,906	23,566					918	10,011	396	4,333	229	2,144
	Radios	2,194	19,402	725	5,045	8,927	81,031			495	4,577	4,200	39,231	909	8,703	1,290	8,993
	Mixers	148	1,463	47	566	382	5,484			41	458	263	3,306	112	1,651	134	1,313
	Cookers, Casseroles	48	467	15	269					123	1,380	75	772	99	782	204	2,916
	Irons	602	4,808	473	3,625					483	2,909	1,370	12,925	1,086	9,696	921	7,058
	Waffle Irons	129	1,182	135	1,073					95	722	350	3,822			249	1,516
	Toasters			201	1,464					132	1,132	599	5,499			462	3,537
	Table Stoves	149	1,143	133	1,342					104	868	215	2,340	422	4,752	216	1,985
	Heating Pads	41	615	30	413					24	336	129	2,059	57	1,845	145	1,068
	Curling Irons											34	469	158	2,600		
	Coffee Makers	96	887	197	1,480					138	976	275	2,936	387	4,446	390	3,178
	Sewing Machines			3	140	725	10,303							147	1,173	81	487
	Clocks	154	1,499	65	461					147	1,106	480	4,662	240	3,273	330	2,256
	Fans	129	1,410	47	1,441					88	1,806	331	4,156	519	2,083	58	2,320
	Floor Polishers													6	90		
	Sun Lamps	9	251		49							25	843			2	16
	Reflector Lamps			672	3,055					117	1,351			497	6,532	559	6,984
	Miscellaneous Lamps			227	1,946					138	798			564	6,612	848	6,312
	Yard Lights									51	437						
	Misc. Small Appl.	256	2,092							179	1,298	523	6,163				

Sources:

[1] Compiled by Los Angeles Bureau of Power and Light for territory served by that system.
[2] Figures compiled by Electric Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60%.
[3] P. G. & E. reports sales of major appliances only based on accurate reports available from dealers' accounts. Ranges, water heaters and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers.
[4] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Estimated monthly sales figures used in this table: Clocks, fans, included under miscellaneous.
[5] Includes dealer reports from Midland Counties Public Service Corporation also. Compiled by Valley Electrical Supply Company.
[6] Includes reports from dealers on San Joaquin Valley system of company as well as Southern California areas served.
[7] Includes Utah Power & Light Company territory in Utah, Idaho and Wyoming. Also Western Colorado Power Company territory.
[8] Dealer sales only for Spokane and company territory. Company sales not included. Table stoves, grills included with cookers.
† Under current month heading is shown previous month's figure. Lag of one month is also shown in total sales for year to date, which began December, 1936.
‡ September report was not available at time of going to press.

Attacking the Problem of Low-Cost Underground

One case in which the requirement of serving a residential subdivision by underground was met with apparent success

By L. E. WOLBERT

Assistant District Superintendent

Pacific Gas & Electric Co., Redwood City, Calif.

THE PROBLEM of serving new high class and other residential subdivisions with an electric underground system has been with us for a long time. All subdividers prefer the underground distribution system and those who are able to pay for the additional cost do not hesitate in advertising the fact and offer it as an additional inducement for prospective buyers and home seekers. Underground is unquestionably an asset to a subdivision, but in the past the cost has been excessive. A cheaper method to cover residential underground systems is needed and must be found to warrant its general use.

The developers of the tract herein described insisted that all utility facilities be installed underground and in accordance with their desires several methods of installation were submitted. They liked the conventional type of underground, i. e. ducts and manholes, but could not see their way clear to pay for the system, as it would, they felt, increase the cost of lots abnormally. Worked out was an acceptable plan whereby a complete underground system could be installed at a nominal figure.

While the general plan is not entirely new, many cost factors of this installation are particularly favorable to underground over an equivalent overhead system.

The plan calls for rear lot distribution, using about 5 ft. of right of way.

Rubber insulated, single conductor, 4,000-volt, No. 4 solid, with concentric stranded neutral and jute outside protection, a standard trench lay product, was used for the primary runs. Rubber covered No. 1/0-600-volt trench lay cable with a No. 2 bare copper cable was used for the secondary runs. Primary junction and transformer points are set up to supply at least two secondary boxes in opposite directions and in some cases boxes at right angles to the normal run, which is in accordance with the usual secondary distribution practice.

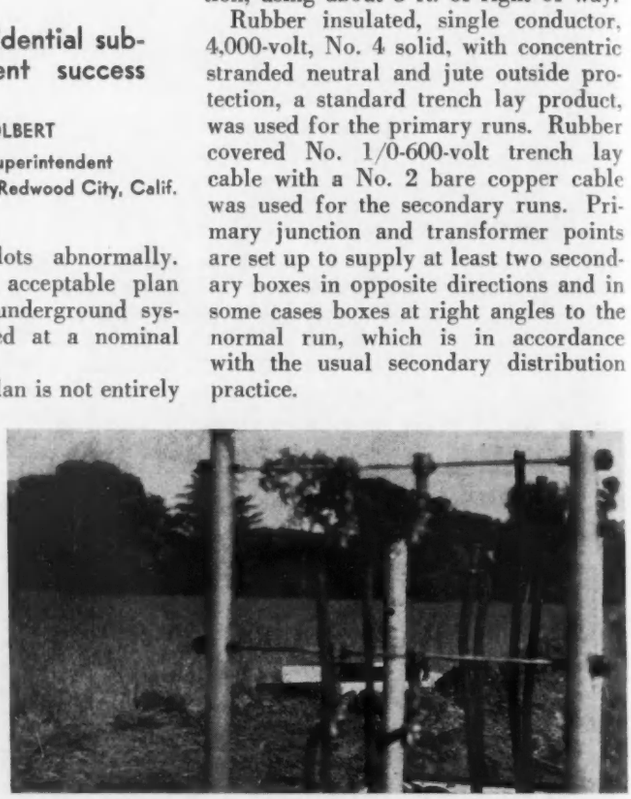


Fig. 3 (at right)—Two vertical, 1¼ in. pipes form the secondary bus rack. No. 1/0 solid copper rods stretch between these pipes, being carried on bakelite bushings. In some cases the bakelite nut was used as shown to cover the rod ends. Bayonet fuses and connections are obvious

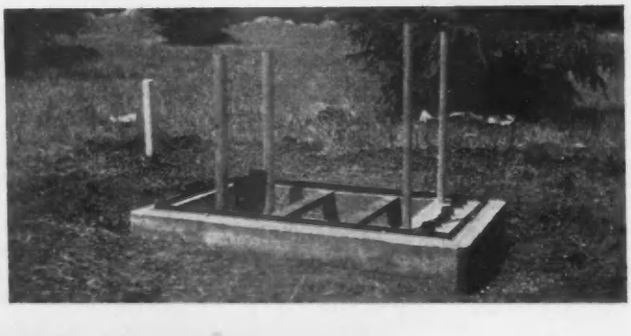


Fig. 2 (at right)—Forms have been removed. Evident across the center of the pad are the channel irons which will support the transformer, at the ends, the structures for primary cables, secondary bus, etc. Pipe standards and channels were cast into the concrete

Fig. 1 (at left)—Concrete pad which forms the foundation for the transformer and house, contains a reservoir to prevent oil leaking onto private property. Here, just after pouring, the shop-fabricated forms are shown in place. They are built to come out in sections, be used again

The first factor of cost in favor of this project was the trenching problem. The tract being new and the land, general open territory, a ditch digging machine which was used on the job for water, gas, sewer, electroliers, etc., was able to do the trench work at a reasonable price. By agreement with the Telephone Company the trench was to be used in common. Thus the cost of digging and backfilling was divided. The division of the cost was agreed upon at one-half for each utility.

It is assumed that the total cost of trench and backfilling was 7c per running foot, making the cost to each utility about 3½c.

Primary cables were laid at a depth of 30 in. in one corner of the trench and covered with about 5 in. of soil. Over the primary or on top of the backfilled dirt the secondary cables were laid. This was then filled to leave an eighteen inch trench for the installation of the Telephone Company's conduit. This was laid on the opposite side of the

trench from the electric cable about 18 in. below the ground level.

It was found on opening the trenches that the soil was ideal for direct burial cable i. e., rubber type cable, as it is considered a good practice to provide a smooth surface for the rubber cable to rest on. In other words no cross pipes, no sharp stones or other sharp objects should be on the bed of the trench that might pierce or dent the rubber insulation. Ducts were used at all street, alley and lane crossings. Thus future excavations, extensions, rearrangement or reconstruction, could be effected without street openings. In this job we used a single 3-in. iron, plain black, standard screw pipe for the primary and 2½-in. plain black screw pipe for the secondary.

The second important cost factor is the saving effected in primary junctions and transformer stations. All points where primary was to be terminated or a transformer installed, (Fig. 1) a concrete pad was poured, 5 ft. 2 in. by 3 ft. 4 in., with a basin 2 ft. 6 in. by 3 ft. 4 in. and 6 in. deep as an oil reservoir.

Fig. 6 (at right)—Transformer house, made of No. 16 gage galvanized iron, painted to harmonize with surroundings. Cost was about $35 each, at quantity production by a local contractor. Ample ventilation openings are provided, each protected by copper screen, fine enough to keep out insects

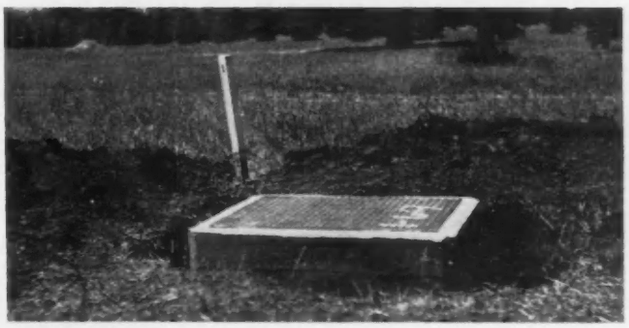


Fig. 5 (at left)—Typical secondary box. The pad is similar to that for the transformer, has a flat, iron cover. The stake is a lot marker, not the type used to indicate underground position

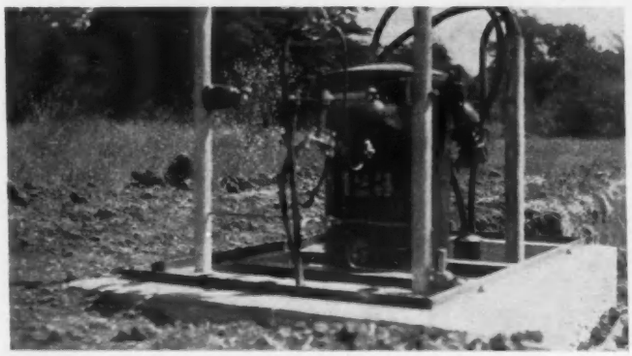


Fig. 4 (at left)—Ordinary pole-type transformer installed on the pad. All ducts were sealed with Duxseal. Splices and connections were made in accordance with suggestions of manufacturers. The transformer appears like this when the house is lifted off for repairs—a two-man job

This reservoir, designed to hold the equivalent oil of a 50-kw. transformer, was provided to take care of any leakage that might occur from siphoning or explosion. It was designed to keep oil from leaking out onto private property, and carried a floor.

Cast into the concrete foundation or pad are two 3-in. channel irons (Fig. 2) upon which the transformer sits. On the primary end of the pad two, vertical 2-in. pipes are inserted and stand 30 in. high. These pipe standards were drilled at the top end to allow one porcelain pole-type transformer cutout to be installed on each of these pipes. The primary cables were brought out between the cutout supports through standard bends. The standard bends extend up to and above the level of the floor of the transformer pads, this being done for the purpose of preventing oil, or water containing oil, to enter the ducts and find its way in or around the rubber insulation of the cable.

We must bear in mind that practically all direct burial rubber cables are vulnerable to oil or some chemicals. Therefore it is important that all insulation be protected from damaging agencies. All ducts were sealed with Johns Manville Duxseal. Splices and connections into cutouts or transformers were made in accordance with manufacturer's suggestions.

A secondary bus rack (Fig. 3) was constructed on the opposite end of the pad from the primary, by the installation of two similar, vertical 1¼-in. pipes. Three sets of holes are drilled through the pipe about 1 ft. apart, facing each other. Into the upper two sets of holes, bakelite bushings were inserted and copper rods of No. 1/0 solid were cut and threaded on the ends in proper lengths to stretch between these pipes. A bakelite nut insulating cap can be used to protect the end if a refinement is desired. This is used in Fig. 3. The lower hole was provided for the ground wire and installed by threading one end and taking the other end through the opposite pipe and into a ground clamp and onto a standard ground rod. All connections taken off the bus are through a secondary fuse.

Sufficient outlets were provided for secondary services and runs. These outlets consist of standard 2-in. pipe bends and are brought up between the secondary rack standards and just forward of the secondary bus. These pipe bends were laid in and cast with the pouring of the concrete.

All of the concrete pads were made from one set of shop-fabricated forms, built to come out in sections and be reset at another point, Fig. 1 shows these in place.

Transformers and busses were covered by a metal housing (Fig. 5), large enough to accommodate a 50-kw. transformer. Ordinary pole-type transformers were installed. The ends of the housing are removable for accessibility to either the primary or secondary end of the house. The entire house may be lifted off the pad by two men for major repairs, transformer changing, etc. Six short bolts secure the house to an angle iron frame.

The houses were made of No. 16 gage galvanized Armco iron, treated and given a priming coat. They were later painted in the field with machinery enamel of a color to harmonize with the surroundings. Made up by a local

sheet metal contractor, they cost about $35 each. Ample ventilation was provided, each opening protected with copper screening, the mesh being fine enough to keep out all insects.

Secondary boxes or handholes were located at key positions to feed four lots where possible. These are simple concrete cast boxes 41 x 29 in. and 18 in. deep, covered with a 24 x 36-in. steel checker plate fastened down by brass cast inserts and brass countersunk screws, and set 1 to 2 in. above surrounding ground.

Advantages

Much can be said pro and con about this method of underground construction but this much is certain; the original cost has been only about two to two and one-half times that of a duplicate overhead system which represents a large saving over a similar lead cable and duct system. It is believed that maintenance will be less than for conventional cable and duct.

With this type of installation all of the advantages of an underground system have been secured and many of the disadvantages eliminated. Flooding, delay getting into manholes, heavy watertight transformers, cutouts and junction boxes which require wiping have been avoided.

The working ends of this system, especially the primary part of it, are above ground and accessible. The secondary runs and all services are fused, thereby eliminating the possibility of tying up a large part of the system in case of failure. Highly skilled labor is not required in making up the connections. A service to a new customer can be made by the usual overhead service crew and the connection of an ordinary three-wire service should not require over 30 min. Removal or installation of a new transformer can be made in minimum time. Apparatus requiring inspection and maintenance is readily accessible.

If we assume that the cable manufacturers statements are correct, and we have no reason to doubt their statements, the cable should last forever. Rigid tests have been made of samples of the cable and several tests of standard splices have been made. One sample was allowed to stand in water for a period of twenty-four hours after which it meggered infinity and finally a potential was built up, which broke down at the splice at around 55,000 volts. This gives a safety factor better than twenty to one.

If all splices are made in accordance with the ones tested it is felt that no trouble will ever develop from the primary cable.

All cables are marked with 4x4-in. redwood posts painted white and stencilled "cable" at advantageous points, especially lot angles, to inform property owners that a cable exists under the ground.

Disadvantages

Of course any type of an underground system has its disadvantages. A few are enumerated herewith, concerning this type of system:

1. The transformer houses, which are above ground, may prove to be an eyesore or in an inconvenient location to home builders. However, all houses are on a dedicated 5-ft. easement.

2. Damage to the cable may occur through construction of fences, outbuildings, planting of trees, shrubbery, etc.

3. The location of the transformer house and secondary handhole probably will never be in a location suitable to the electrician or builder.

4. The color of the transformer house may not suit the owner of the property on which it is located and if changed may not suit the next door neighbor. It may be necessary to change the color of the houses several times, and we may have to go so far as to camouflage them. But we believe that in most instances shrubbery or trees will be planted adjacent to the houses which will tend to hide them.

5. Primary transformer houses may be so located that they will not be readily accessible to repairmen. But we believe owners will cooperate in leaving the houses accessible at all times.

Time Will Tell

There are probably other, unpredictable disadvantages. As these come to our attention through complaints, an almost perfect system can be engineered and laid out. It is realized that this system is neither a new idea nor a general substitute for all other types. However, in this instance, the plan has been ideal and is passed along for what it is worth to those who have similar conditions to be met at reasonable cost.

Experience With Storing Coal

By ALAN A. WOODWARD
Chairman, R. M. E. L. Prime Movers Committee

OBJECT of this investigation was to determine the various methods of handling, and the difficulties experienced in the storing of Rocky Mountain coals.

Of the nine operators reporting, eight have had experience in the storage of coals in question. With one exception it seems that all coals used will fire in storage. If handled in a certain manner peculiar to the particular coal used, the storage time before firing will be somewhat increased. The time which these coals will remain in storage without firing varies from three days to twelve months, while the one exception noted above will remain in storage indefinitely without heating.

The depth to which these coals can be safely stored was recognized as a salient factor, and depths of from 3 to 25 ft. were the limits stated.

R. M. E. L. REPORT

It is interesting that while practically all operators reporting recognize the tendency toward spontaneous combustion in the stored coals of this territory, only two report periodic temperature checks on their storage piles.

No companies report any experience with the blanketing of storage piles with "bug dust" nor the treating with oil spray before placing in storage. The value of packing the coal while storing is noted by three operators. This is accomplished by rolling or by the action of drag-scraper equipment.

As fire preventatives, one operator relies on ventilation, two require the removal of hot coal at the earliest opportunity, while three others fall back on the use of water.

After fires have once started in coal storage piles, remedies fall into two classes—drenching with water and the removal of hot coal.

Test Shows Effectiveness Of Series Capacitor

Oregon installation satisfactorily maintains voltage on a line serving industrial loads with severe fluctuations

By GWYNN E. BISHOP
Portland General Electric Co.

COMPLETED by the Portland General Electric Co. this summer were tests on a series capacitor, confirming a record of satisfactory operation since its installation on the company's lines near Sheridan, Ore., a little more than a year ago. Conditions which existed on the line prior to installation of the capacitor serve to emphasize the benefits that have been derived through its use.

With the revival of lumbering activity, the company found itself with four large sawmills supplied by a 24,000-volt line and located from 21 to 30 miles from the source of supply. The copper in the line was small, being only No. 4. A map of the line appears in Fig. 1.

The nature of the load on a sawmill is such that it causes large swings in power, especially when a log is driven into the main saw. When this action coincided in two or more mills, as it often did, very large swings in power and power factor were encountered with a corresponding voltage swing.

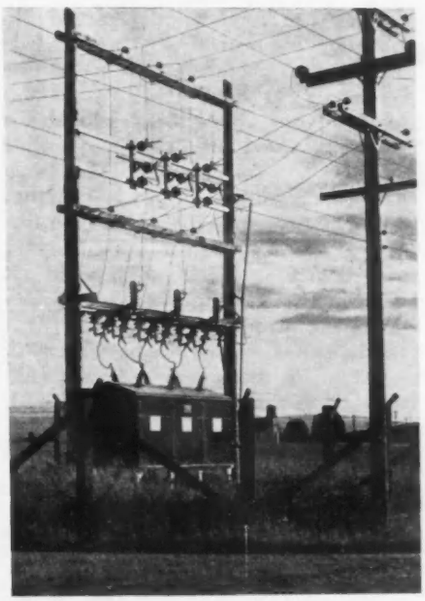


Fig. 3—The 360-kva., 3-phase, 60-cycle, 3,333-volt, 36-amp. line current series capacitor installed by Portland General Electric Co. at Bellevue

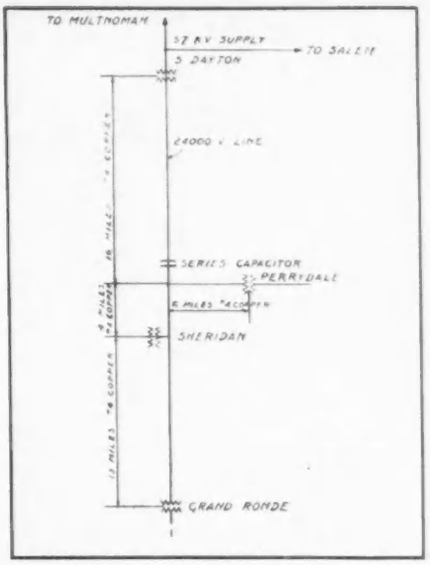


Fig. 1—Scheme of the 24,000-volt line and other Portland General Electric Co. facilities affected by installation of the series capacitor at Bellevue

Curves shown in Fig. 2 were taken at Sheridan, a point about twenty miles from the supply substation. As can be seen, the voltage swings were large enough to produce noticeable lamp flicker. It was evident that some means of eliminating these objectionable swings was needed.

It was apparent at once that a mechanical type of regulator such as a tap changing transformer or induction regulator would be out of the question since the swings were so rapid that they would be over before the equipment could start to operate. Two other courses were open. The first was to build a new, higher voltage transmission line in which the inherent regulation was low. In this particular case preliminary estimates showed that this would cost from $60,000 to $70,000.

The second possibility was to install a series capacitor. The inherent property of zero time-lag response in the series capacitor, the relatively high resistance and reactance of the line and the low cost, approximately $10,000 in this case, seemed to indicate that the series capacitor would be the logical solution.

Accordingly, an order was placed for

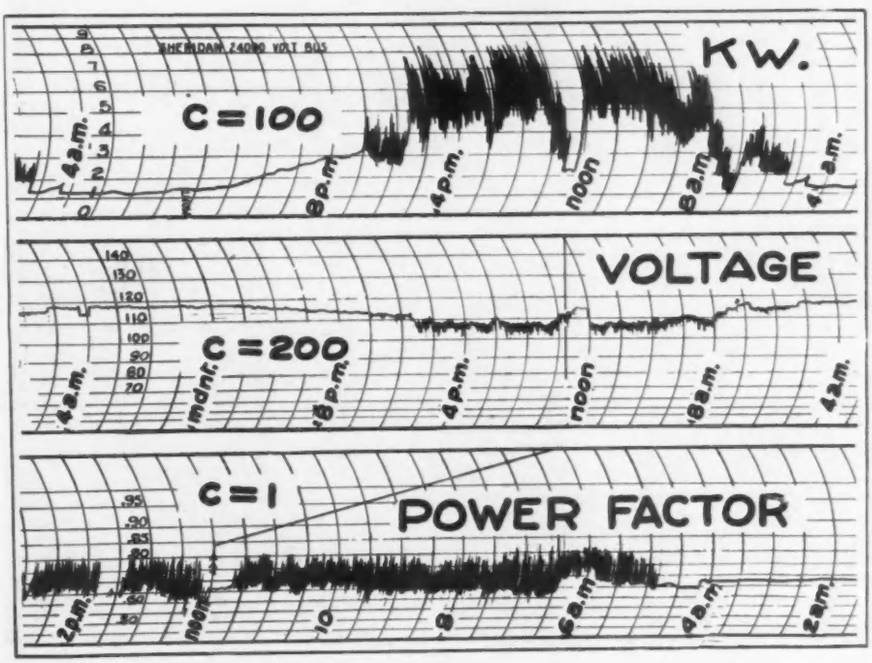
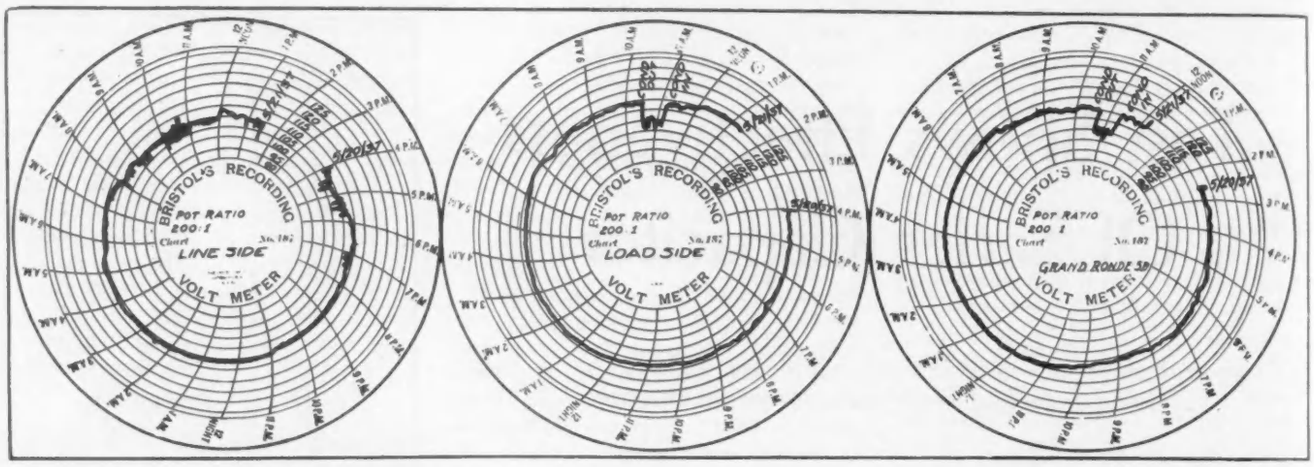


Fig. 2—Power, voltage, and power factor characteristics before installation of the series capacitor. Time progresses from right to left. Note that time scale of the power factor curve is larger. The vertical-diagonal line connects simultaneous points



Figs. 4, 5, 6—Voltage curves taken after installation of the series capacitor. Figs. 5 and 6 include a 1-hour interval during which the capacitor was taken out of the line

a 360-kva., 3-phase, 60-cycle, 3,333-volt, 36-amp. line-current series capacitor, Fig. 3. It was specified that only enough condensers were to be furnished at that time for 29 amp., the full load rating of the supply transformers, but that provision be made that the condensers could be added at a later date to bring the rating to 36 amp. when the load increase warranted it.

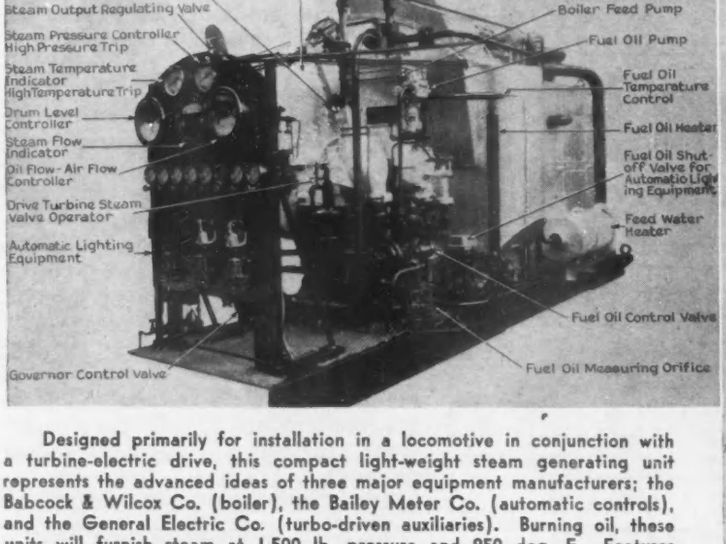
The capacitor was installed at Bellevue, about five miles toward the supply substation from Sheridan. This location was chosen so that a branch line about five miles long would have the benefits of better voltage regulation. The size of the capacitor was calculated to hold the voltage constant at Sheridan at 80 per cent power factor, since Sheridan was approximately the load center.

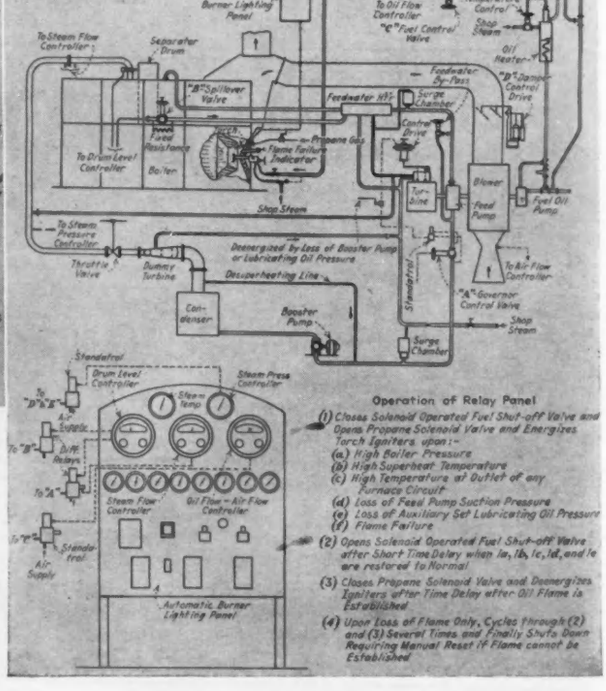
The structure upon which the condenser was mounted was of the wood pole type. Lightning arresters were placed on only one side. A special six-pole, double-throw switch was used to disconnect the condenser from the line and connect its terminals to the ground. An ordinary three-pole, single-throw switch was used for bridging the line around the condenser. These two switches had special interlocked handles so that the condenser could not be disconnected unless the line was properly bridged. Also, the line switch could not be opened unless the condenser switch was in the proper position.

This series capacitor has been in operation for more than a year and no trouble whatever has been encountered. The best indications as to its success as a voltage regulator are the graphic records of its performance, taken this year.

The first of these, Fig. 4, was taken on the supply side of the regulator and shows the characteristic voltage swings. In the test recorded in Fig. 5, taken on the load side of the regulator, the capacitor was taken out of service from 10:30 a.m. to shortly after 11 a.m. Behavior of the voltage with the capacitor out of the circuit is evident. The capacitor was similarly removed while recording the other chart (Fig. 6), which is that for Grand Ronde, 13 miles away.

COMPACT, HIGH-PRESSURE STEAM PLANT


Auxiliary Set Drive Turbine
Steam Output Regulating Valve
Steam Pressure Controller High Pressure Trip
Steam Temperature Indicator High Temperature Trip
Drum Level Controller
Steam Flow Indicator
Oil Flow - Air Flow Controller
Drive Turbine Steam Valve Operator
Automatic Lighting Equipment
Governor Control Valve
Blower
High Pressure Surge Chamber
Boiler Feed Pump
Fuel Oil Pump
Fuel Oil Temperature Control
Fuel Oil Heater
Fuel Oil Shut-off Valve for Automatic Lighting Equipment
Feed Water Heater
Fuel Oil Control Valve
Fuel Oil Measuring Orifice


Solenoid Operated 3-Way Valve
Burner Lighting Panel
To Oil Flow Controller
Temperature Control
"C" Fuel Control Valve
Shop Steam
To Steam Flow Controller
Separator Drum
Oil Heater
"B" Spillover Valve
Feedwater Bypass
"D" Damper Control Drive
Feedwater Inlet
Surge Chamber
Control Drive
Load Resistance
Propane Gas
Flame Failure Indicator
To Drum Level Controller
Boiler
Turbine
Blower
Feed Pump
Fuel Oil Pump
To Steam Pressure Controller
Throttle Valve
Dummy Turbine
Desuperheating Line
Deenergized by Loss of Booster Pump or Lubricating Oil Pressure
To Air Flow Controller
"A" Governor Control Valve
Condenser
Booster Pump
Surge Chamber
Standatrol
Drum Level Controller
Steam Press Controller
Steam Temp
Air Supply
Diff Relays
Steam Flow Controller
Oil Flow - Air Flow Controller
Automatic Burner Lighting Panel
Operation of Relay Panel
(1) Closes Solenoid Operated Fuel Shut-off Valve and Opens Propane Solenoid Valve and Energizes Torch Igniters upon:-
(a) High Boiler Pressure
(b) High Superheat Temperature
(c) High Temperature at Outlet of any Furnace Circuit
(d) Loss of Feed Pump Suction Pressure
(e) Loss of Auxiliary Set Lubricating Oil Pressure
(f) Flame Failure
(2) Opens Solenoid Operated Fuel Shut-off Valve after Short Time Delay when Ia, Ib, Ic, Id, and Ie are restored to Normal
(3) Closes Propane Solenoid Valve and Deenergizes Igniters after Time Delay after Oil Flame is Established
(4) Upon Loss of Flame Only, Cycles through (2) and (3) Several Times and Finally Shuts Down Requiring Manual Reset if Flame cannot be Established

Designed primarily for installation in a locomotive in conjunction with a turbine-electric drive, this compact light-weight steam generating unit represents the advanced ideas of three major equipment manufacturers; the Babcock & Wilcox Co. (boiler), the Bailey Meter Co. (automatic controls), and the General Electric Co. (turbo-driven auxiliaries). Burning oil, these units will furnish steam at 1,500 lb. pressure and 950 deg. F. Features include completely water-cooled furnace, forced air draft, rapid steaming, and fast responsiveness to load fluctuations. Weight reduction and compactness are obtained by increasing auxiliary power and a reduction in plant efficiency particularly at high output. Two of these units, known as "Steamotives", capacity 40,000 lb. of steam per hr., are being built for two new 2,500-hp. electric locomotives for Union Pacific Railroad.

Do today's loads justify the term

Residential Feeder?

By O. R. EVANS
Pacific Gas and Electric Co.,
Stockton, California

HONORED by custom is the industry's practice of classifying feeders into three types. Industrial feeders serve power primarily, lighting being incidental. Commercial feeders have been referred to as serving lighting and power in combination. Residential feeders have always been considered as lighting feeders serving residences only.

Recent studies that have been made indicate that former conceptions of load and power factor on residential feeders may be erroneous. Conditions during the past few years have changed materially. Residential feeders now are a combination of lighting and small power service. This latter, in the aggregate, is of considerable volume.

During the past few years there also has been a tendency for commercial business to spread to the residential area. This can be noticed by the increasing number of service stations, neighborhood stores, cleaning establishments, and apartment houses. These commercial businesses have heavy lighting loads in addition to considerable power, gas-filled sign lighting, building outlines, refrigerators, and other power uses.

In strictly domestic usage, radios, vacuum cleaners, ironers, washing machines, and many other small appliances are now in general use. Most of these appliances are operated by fractional horse power motors having very low power factor. The tendency toward lower power factors for strictly domestic loads is very evident.

Commercial loads in the residential area, due to gas-filled sign lighting, outline design, refrigeration and other power uses also have a tendency toward low power factor. A study has been made of 200-amp., 4-kv. residential feeder. Connected to this feeder are 312 transformers with a total capacity of 4,198 kva. serving 2,883 services. The power factor test on this feeder carried on at the substation, including the feeder regulators, primary lines, transformers, and all attachments, shows the following data.

The over-all power factor on this feeder at peak load is considerably lower than would be expected six or seven years ago. Many engineers believe that this power factor will be further reduced by the additional installation of small, motor-driven appliances, and still further reduced when the use of air conditioning becomes general. It is realized that this test for power factor on a feeder would be influenced by the regulators, transformers, and other equipment.

As a matter of interest, a test was made on the secondary side of a 15-kva. distribution transformer serving 31 residences. A survey of the connected load on these residences showed the following appliances:

2 Ranges (Total 15.9 Kw.)
19 Washing Machines
7 Ironers
16 Refrigerators
31 Radios
29 Vacuum Cleaners

The power factor on this load shows the following conditions:

	Load: Kw.	Power Factor
10 a.m.	5.6	81
11 a.m.	4.7	83
1 p.m.	2.1	61
3 p.m.	4	85
5 p.m.	6.1	75.7
5:30 p.m.	12.5	98.2
6 p.m.	11.2	96.8
7 p.m.	10	97.2
9 p.m.	8	96.8
11 p.m.	2.4	76.3

24-hr. period: Average power factor 83.7

It can readily be seen by these figures that the power factor in individual residences has a tendency to be low. Power factor therefore is becoming more and more important, and its units can be evaluated in the necessary kva. demand carried through from customer to the hydro plant in the mountains or to the steam generating station. It would be of interest to evaluate units of power factor on this basis. Such figures might show that an unnecessarily large expenditure is necessary to meet the demands of decreased power factor caused by change of load characteristics on any and all of our distribution feeders.

●

Feeder No. 405: 4-kv. residential district feeder, 3-200 amp. induction regulators, total kva. of transformers connected: 4,198.

Saturday

	Load in Kw.		Power Factor		
	Low	High	Low	High	Average
Midnight to 4 a.m.	150	225	38.5	52	47
4 a.m. to 8 a.m.	150	675	38.5	71.6	53
8 a.m. to 12 noon	510	750	64	75.7	70.1
12 noon to 4 p.m.	495	525	63.5	71.7	65.5
4 p.m. to 8 p.m.	690	1,260	77	91.8	81.5
8 p.m. to midnight	360	990	65	90.2	82.5

For 24-hr. period:

Total 13,440 Kw.-hr.
Lowest P.F. 38.5
Peak 1,260 Kw.

Highest P.F. 91.8
Low 150 Kw.
Average P.F. 73

Effect of Water Wheels On Salmon Tested

The first comprehensive test of the effect of revolving water wheels on fingerling salmon was conducted Aug. 29 by the Oregon State Fish and Game Commission at the Cazadero plant of the Portland General Electric Co., on the Clackamas River near Portland, under the direction of Dr. Harlan B. Holmes, aquatic biologist for the North Pacific Division of the Army Engineers. The test was part of a general study of a proposed plan to re-establish runs of spring chinook salmon and steelhead trout in the upper Clackamas River, the idea being to see what would happen to the down-stream migrants which happened to go through the power penstocks instead of over the spillway of the dam.

A total of 1700 3-in. chinook salmon were introduced into the penstock in three separate runs, and several means were employed to recover in the tailrace as many fish as possible alive or dead. A ¼-in. mesh net was stretched across the tailrace; a professional diver was stationed at the bottom of the tailrace, and four to six men working with dip nets from boats collected dead and disabled fish on the surface.

The first run of 900 fish was used to develop technique. The second and third runs of 400 fish each were considered the official test, and from these two runs 183 and 175 dead fish were recovered respectively. A total of 282 live fish was recovered from the three runs, but observers noted that neither all the live fish nor all the dead fish were found.

Dr. Holmes concluded that in this particular wheel there would be a loss of 50 per cent of all the fish passing through it.

In his report of the test he points out that different types of wheels would have a varying severity. Generally speaking high-head, high-speed wheels of which there are few in the Northwest, would be the most severe; whereas the low-head, propellor-type wheels, such as are installed at Rock Island on the Columbia River, would be comparatively harmless. The wheel on which the tests were made at Cazadero would fall between these two extremes in severity. It is a 5,000-hp. reaction turbine, operating on a head of 130 ft. and running 360 r.p.m. On full load it passes 434 sec ft. of water.

Vacuum Tubes in Action

VIII—Thyratron Control in Welding

By H. C. STANLEY
Assistant Engineer, General Electric Co.
San Francisco, California

IGNITRONS are well adapted to spot welding as they can carry large slugs of current for short periods, making the use of a series transformer unnecessary. A typical circuit using ignitrons is shown in the sketch.

It will be seen that the ignitron power tubes T_1 and T_2 carry the welding transformer current direct, and that these tubes are connected "back to back," so as to pass full-wave a.c. power. These tubes are controlled or "fired" by thyratrons T_3 and T_4 by passing current through the starting electrodes which are partially submerged in the mercury pools. Thyratron T_3 is connected across the power circuit and will pass current through the starting electrode of ignitron T_1 when the grid of T_3 is sufficiently positive. This grid may be biased negatively to keep the tube from firing except when the keying circuit is opened, the opening of which gives the grid sufficient positive potential to cause the tube to fire. The keying circuit includes a mechanically operated contact, which at the instant of opening feeds positive potential to the grid through a small capacitor. The action of this little capacitor is very interesting as it is the heart of the timing operation. A source of direct current is provided by means of a small rectifying tube. When this direct current is applied to the capacitor circuit, current will flow through the capacitor until it is fully charged at which time the capacitor constitutes to all intents and purposes, an open circuit, so that the flow of current is entirely blocked off. The passing of current through the capacitor builds up a positive potential on the grid of the thyratron, but when the capacitor is fully charged the current stops flowing, permitting the grid to regain its negative bias. The time required to charge the small capacitor can be accurately controlled and likewise the firing period of the thyratron. Before the next firing period the capacitor must be discharged through a shortcircuiting switch.

Ignitron T_1 fires immediately after thyratron T_3, allowing power current to flow through the welding transformer. This builds up a voltage across the primary of the welding transformer which in turn energizes transformer TR. The secondary of TR makes the grid of thyratron T_4 positive causing ignitron T_2 to fire at the beginning of the next half wave. Assuming the grid of T_3 to have regained its negative bias before the beginning of the next cycle, no more current will be passed until the keying circuit is operated, and a spot weld lasting exactly one complete cycle has been accomplished.

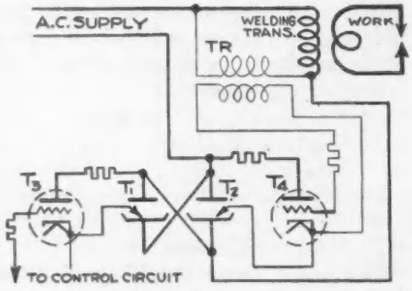


Fig. 1—Typical circuit employing ignitrons to control spot-welding current

There are numerous installations of one cycle spot welders using this control circuit. They are used for spot welding stainless steel sheets, welding of small projections and are used extensively by one manufacturer for high speed spot welding of mild steel sheet. The units are formed and completely welded at a speed of 300 each minute. The success of this process was made commercially only through the use of thyratron control.

A wide range of tube-controlled spot welders is in use. The lower ratings use ignitrons of small current capacity, and for heavy work large ignitrons are employed having a capacity of several thousand amperes. The larger tubes are water cooled. Equipments include time adjusters calibrated directly in cycles of the power supply. For instance, if the timing knob is set at "8" on the dial, the welding current will last exactly 8 cycles. This welding time can be set as low as ½ cycle and as high as 30 cycles. The great advantage is that for any particular setting the spots will all have exactly the same duration, and accurate timing is of prime importance because heating at the weld is proportional to time.

Metal is gradually replacing glass in the manufacture of thyratrons and ignitrons which has resulted in tremendous current capacity increase with smaller and less expensive tubes. The brilliant flashing visible in large glass ignitrons, when passing heavy currents, is a fascinating sight. This flashing is a visible indication of what takes place in the tube. At one instant the pool of mercury in the bottom of the tube is cold and lifeless. The next instant a brilliant flash fills the whole tube.

What caused this brilliant flash? First, the grid of the controlling thyratron was brought up to a positive potential. This permitted electrons to pass from the heated cathode to the plate. The passage of the electrons dislodged electrons from the atoms in the mercury vapor, resulting in neutralization of space charge and a low resistance path between cathode and plate. This permitted passage of current through the firing electrode of the ignitron. The passage of current between firing electrode and mercury pool created a minute cathode spot on the pool which liberated electrons. These electrons dashed to the anode, liberating electrons from the atoms in the mercury vapor. This resulted in the formation of myriads of positive ions. These positive ions were attracted to the cathode, and in their journey encountered electrons which did not have sufficient velocity to prevent their being captured by the positive ions. The resulting union between the incoming electrons and the electrons already in the mercury atoms, set up an electronic activity within the atoms, which activity was manifested by radiation, and it was this manifestation of radiation by myriads of atoms that caused the brilliant flash.

No brilliant flashes appear in high vacuum tubes, as there are no gas atoms to be ionized. However, high vacuum tubes would be of little value in the welding game. A pool of mercury is a prodigious source of electrons, and mercury vapor is a prodigious source of ions. The combination results in a low resistance path capable of passing prodigious currents.

Note: Details of this subject will be found in "Resistance Welding Improved by Thyratron Control," by Warren C. Hutchins, *General Electric Review*, March, 1937, page 116.

What Needs to Be Studied in the engineering, operating fields.

P. C. E. A. groups sift out problems which demand attention this year

By D. D. SMALLEY
Chairman, Operating Economics Section
Pacific Coast Electrical Assn.

INDICATING the immediate problems confronting engineers and operating men in the Far West are the subjects which, after a consideration of practically the entire field, attracted particular attention of delegates to the Pacific Coast Electrical Assn. meetings. At these, held in San Francisco and Santa Monica, members met in small groups, without having specific subjects selected in advance.

Production Group

Steam practice discussions dealt first with topping turbines. Pointed out was the fact that greatest value is obtained when these are superimposed on low pressure units, particularly the 200 to 250-lb. range. Emphasis was placed on the importance, in considering a possible topping unit, of taking into account the possibility that such an installation might perpetuate in service, equipment which already was obsolete.

Some means, it was agreed, should be found to assemble data which might prove valuable to sales and commercial departments in meeting steam competition. Included in such would be the important item of boiler maintenance costs.

Hydro maintenance men gave attention to the replacement of buckets on impulse wheels, a discussion including mention of the first installation of drop-forged buckets. A paper on this was proposed. Remodeling of needle valves for higher efficiency and the remedies for bucket cavitation, both by arc welding and metal spraying, were discussed. It was agreed that the methods are well defined, require no special investigation, although some desired more data on physical properties of spray metals.

Transmission-Distribution

Several delegates reported on underground cables. It was pointed out that underground, oil-filled has been placed in service up to 230 kv. The Pacific Gas & Electric Co.'s 120 kv. Oakland installation was described. Regarded as undesirable was the use of short underground stretches in conjunction with long overhead, because of the different electrical characteristics.

Information on design changes in large capacity, 12-kv. cables, dealt especially with compacting, effected by having all lay in the same direction, a process reducing sheath diameter 4 to 5 per cent, raising cost 5 per cent.

General acceptance of press joints for cables was predicted in a discussion of hydraulic presses and other means of jointing.

Power factor and voltage regulation forums were especially concerned with the use of static capacitors, step voltage regulators and induction voltage regulators in rural distribution. Distribution possibilities of these devices were recommended for study. Interest in a paper on relay, fuse and arrester protective methods led to its being scheduled for another presentation.

Metering

Concern over the high maintenance costs of demand meters was voiced by meter men who urged a joint study with rate departments on the subject of metering costs vs. rates. Favored was a program for establishing two sizes of single-phase meters as standards for all self-contained installations—15-amp. for most residences, 50-amp. for most commercials.

Safety

Unloading poles by the old cut-and-run method was frowned upon and improved methods were described, particularly one employing tubular stakes known as Cojo Binders in car pockets. Instances were reported in which these, aside from safety, cut unloading time in half.

Demonstrated at Santa Monica was the Larson method of artificial respiration, taught this year by Southern California Edison Co. as alternative to the Schaeffer method (below, left). It's invaluable when back or ribs are injured. At right, top to bottom: patient's hands lashed one over other, palms down beneath his forehead, operator's knees near patient's head, hands on shoulder blades; next, operator swings his weight to his hands; then slides his fingers beneath patient's elbows, raising his arms, part of his weight, thus aiding inhalation. Cycle takes 5 sec., 12 cycles per min. Demonstrating are Howard Miller (operator) Edison safety supervisor, and C. A. Fishback, live line equipment instructor

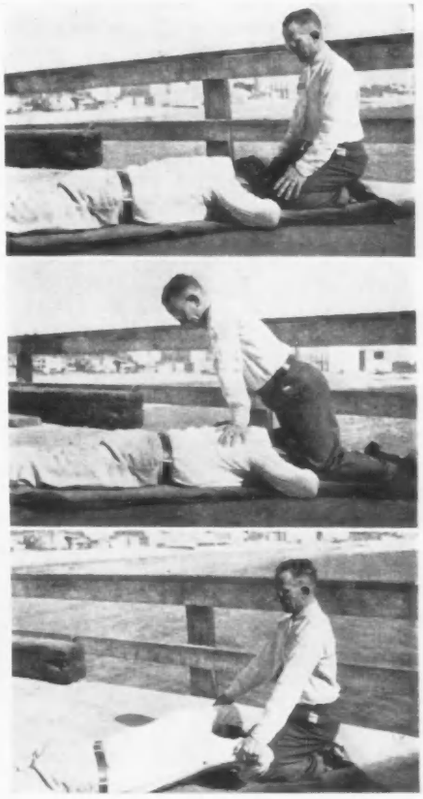
Where to carry ladders on trucks and various practices concerning safety ladders met with warm discussion but widely divergent opinion.

Feeling was that the California accident commission's rulings on guard rails for elevated platforms were not the best. Experience indicated that the two-rail, 42-in. high requirements interfered with work and created hazard. Studies by the commission leading to new rulings are expected.

Grounding of transformer cases and other equipment by various eastern companies was reported as having improved accident records there. Most delegates felt that such practice in the West would increase hazard. The subject was recommended for further study.

Personnel

The question of training men in jobs, fitting them to appropriate fields, training an understudy, and other phases of this problem were felt to have such an important bearing on the efficiency of operating departments that formation of a special committee to deal with it was recommended. This question was probed at joint meetings of all groups.



Electra's Husband

And the Simple Life

AN acquaintance dropped in for an evening of bridge. In that pause that comes before the table is set up and the ash trays, cards, and score pads are assembled from wherever Electra hides them, he picked up a copy of ELECTRICAL WEST from the magazine rack next to the big chair. It was the one with the Appliance Sales Guide in it. It was no novelty to have him do so, for others often do the same thing. Yet when my friend turned to me with a sarcastic little smile after thumbing the pages, I wondered if he had discovered inside it some skeleton in the industry's closet with which to tantalize and rag me during the remainder of the evening.

"You electrical people are certainly putting pressure on the poor innocent consumer to buy, and buy and buy, aren't you? You certainly don't miss any opportunity to bamboozle us into buying your electrical appliances and current with every trick in the deck," he said in that way that is meant to make a thief and a crook out of you. It used to worry me, but not any more. I gave him the answer which is the retort any one in this business ought to make under the circumstances.

"Why not? Hasn't it made electricity cheaper because we have constantly sold more of it? Aren't the appliances themselves within the financial means of more people because we have been able to sell so many that now they can be mass produced for economy?

"Of course I realize that there are two schools of thought in this matter of distribution to the ultimate consumer. And evidently you are one of the thousands who would rather believe the boys, of whatever age, teaching economics in universities or writing books about it, than those who are engaged in doing the distributing and making something of a success of it. If they did not succeed they couldn't eat, so it is rather vital to them.

"This first and most widely publicized group of experts on distribution seems to want to feel sorry for the consumer, without thinking all the way through to a realization that if the consumer doesn't buy there are fewer jobs, less production, less money in circulation, harder times, and a lower standard of living. They yearn for the simple life of Mexico, where the peons live from hand to mouth, play guitars and are healthy and happy—unless an epidemic of smallpox comes along. I am afraid that group of scholars do more wishing than they do working, and they wish that an abundant life could be spread around without the necessity of working much for it.

"The other group—I can't call it a school for it has hardly any time to think up why it is doing what it is—just sells as a method of distribution because it seems to be practical; it works. And this group knows that to move merchandise you *have* to sell, and sell for all you are worth. It has learned from watching people more and theories less that even if you have the swellest mouse trap in the world, most people will put up with a certain number of mice rather than beat a path to any man's door through any kind of a forest to buy one. Either they put up with the mice or tie the grub up in a sack and hang it from the ceiling. If you want to sell mouse traps you have to show them, tell about them, and then sell them—make them dissatisfied to put up with mice any longer.

"This practical bunch has also discovered by trial and error that salesmanship and competition are the most effective means there are yet known to man to distribute more wealth more widely. The reason for it is that it works automatically whether anybody thinks or plans it or not. The man who thinks ahead and tries to corner it all sooner or later gets dewatered by the pressure of a lot of natural consequences he could not be smart enough to foresee. His corner is short lived at best. Even big fortunes, by nature's own process of giving smart men spoiled and weak sons, are dissipated in a couple of generations and diffused over more people.

"On the other hand the 'feel-sorry' crowd like to think that more equable distribution has to come about by some sort of governmental or social divvying. If you were in the army during the last war you had a sample of that. Certainly you were given your clothes and eats. But you had to take what they handed you. Everyone, nearly, received the same, whether he liked it or not, whether he could eat the "slum" or whether the cockeyed uniform fitted. Remember?"

"Do I?" my guest responded with a fervor that made me wonder what kind of a uniform he was handed by his supply sergeant.

"Yes, there is some waste in our competitive way of distribution, but I noticed plenty of waste in the army too, both before, during, and after the war. In competition, by and large, the company that is wasteful can't stand competition from the rival who is efficient. Either the waste has to be cut, or the business folds up.

"Likewise, by and large, competition makes it hard to gouge the customer for very long. Even with a brand new, patent protected device, it does not take long before someone else offers either equal or in some cases improved competing products for about what the service really costs.

"And furthermore, if I ever decide to take to the simple life there are plenty of places I can hide away from salesmen. That's another advantage of liberty over regimentation. If I decide to hide out in the hills with a few chickens, pigs and a cow, nobody will send out a detail looking for me because I am A.W.O.L. It is nobody's funeral but mine if I decide to live with the pigs in the parlor.

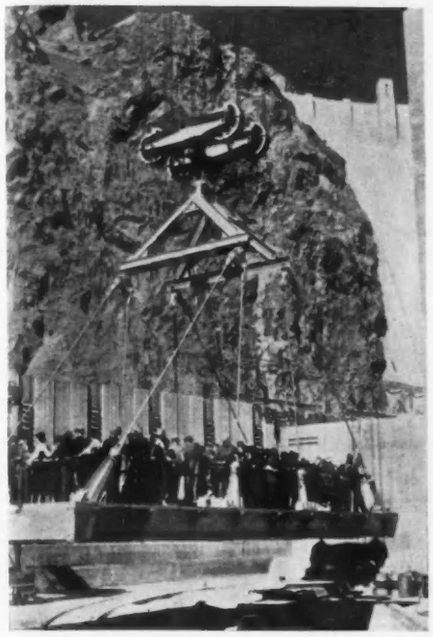
"What I am getting at is that you can't have your cake and eat it too."

"What you had better be getting at," Electra cut in with, "is those ash trays I asked you to get before you make a pig pen out of *my* parlor, you and your simple life."

AFTER the company left and I was helping Electra pick up the dirty dishes from our midnight snack, she turned some of her pent up venom loose on me (I had balled up one little slam on her and missed a couple of obvious signals during the evening.)

"You public service people talk and think with all of the authority of real experts. You can peddle more theory than a group of pink academicians. What do you know about competition? You run the only store in town where people can get your service. The public has to come to you for its electricity and like it. Most of the time they take it away from you. It would be a real Godsend if every one of you had received a baptism of fire in some really competitive business before you went into the utility game. Then you would think in terms of customers instead of consumers. Some tough competition would teach you a few lessons."

Even as I fell off to sleep I kept thinking that maybe she is right.



At Boulder Dam the special trainload from the East took the skyride on one of the big aerial trams across the gorge

All the Industry joins in making the

Contractors Convention

in Los Angeles one of the best in the West

IN TRUE Los Angeles style, the 35th annual convention of the National Electrical Contractors Assn., held at the Los Angeles Biltmore, Oct. 18-21, was one of superlatives. It almost reached the full meaning of "colossal", and did so by fair means. All of the resources of that versatile land were thrown into the program of entertainment and instruction, creating a record breaking convention that will tax future host cities even to imitate. For Los Angeles certainly "put it on" for the visiting "electricians".

These are no mere extravagances of speech. The 140 people who arrived on the special 14 car train, after a preview of the vastness of the West glimpsed at Grand Canyon, and at Boulder Dam, will attest to the thoroughness of the hospitality and the richness of the program of addresses and activities, provided by the entire electrical industry of southern California. As a living example of cooperation at work the various branches of the industry meshed into the affair like gears of a Swiss watch. If any strains or tight bearings existed behind the face, the good time of all hands never missed a tick.

A strong undercurrent did develop, a battle of proxies and of accredited votes, of caucuses and rump sessions, but it never came to a real issue even in the closed session for contractors only on Wednesday, although a resolution was submitted in its behalf and withdrawn. As might be expected in this day and age, the issue was that of unionization. Result of the entire underground rumbling, not unlike a good California earthquake, was, however, a constructive reference of the issue to properly selected committees rather than the splitting of the association into union and non-union camps, such as might have developed from the resolution. Such a policy is neither anti-labor nor is it a complete default of the contracting business to the union. Yet a means of negotiating upon a mutually self respecting basis was provided and the convention went on with its more obvious aspects according to Hoyle.

Highest peak in the many excellent addresses heard was the thrilling and moving challenge delivered by Dr. W. Ballentine Henley, of the University of Southern California, almost at the close of the convention. With lightning rapidity Dr. Henley swept his listeners on to his ultimate challenge—a challenge to assume mutual responsibility and self discipline in order to justify the trust that is inherent in human beings.

Two people who had heard the same string quartette, he observed, each had different reactions to it; to one it was a long squeak, to the other a treat of gorgeous melody. "You have been attending this convention for four days—so what?" he asked. Then he followed by asking whether out of it only a way to make more money was to be the goal or the result, or whether its program would assist in the selection of standards of conduct and action. Were men who attended to know better where they were going because of the selection of such purposes or was the business to be one of gadgets only, and the purpose only a whim or caprice or greed, he asked.

The gadgets seen in abundance in all the exhibits at the convention could have two types of purpose. They could make life more convenient and comfortable—so what? Three planes of living are available to mankind. They can live on the animal plane like pigs and use their energies to build bigger and better pig pens. They may live on a plane of cold intellectual achievement and create coldly scientific devices that may as easily destroy mankind as benefit it. Or they may live on a plane of spiritual activity—not merely religious—which looks upon the universe as a manifestation of energy. A table he described as a swarm of gnats—electrons—flying about ceaselessly in the

President Earl Peak of the contractors was welcomed to Los Angeles by President Adolph Hoch, of the Board of Public Works, plus a gay band of Spanish singers and dancers. Wm. McGuineas of Chicago danced with joy, and the senorita (left)

George Patterson of Toronto received the James H. McGraw Award for Contractors from Earl Whitehorne, chairman of the awards committee, at the gala banquet

form of a table. Man is a swarm of energy in the form of a man. But man's swarm has the ability to think and to assume the trust to which his superior talents entitle him. Else like the saber-toothed tiger, eminently more fitted by nature for sheer survival of the fittest, physically, than man, the latter too might become extinct.

Many must realize his larger responsibility to society. The Carpenter of Galilee, Dr. Henley reminded his listeners, had offered no social panaceas, no plans or program for a more abundant life, no nostrums—but he did lay down a few simple rules for the individual in his relations with other men. If the individual falls down on his own responsibilities, government steps in, Dr. Henley declared. All of the restrictions of government have come because we have failed to take care of our responsibilities ourselves, failed to impose upon ourselves the discipline necessary to make fundamental mutual aid take care of our society. Mutual aid, he concluded, depends upon the ability and the willingness to cooperate.

Entertainment Peaks

The entertainment program was a series of high peaks, each different, each exalted in itself. Sunday night, the evening of the arrival of the special train, a group of 148 was taken for a sky ride over Hollywood in big TWA airliners. Monday noon the Los Angeles Electric Club outdid itself in providing as unusual a program as could be wished for its convention guests. Monday night the men were toured through the sound stages of the movie studios. Tuesday night the entire convention ascended Mt. Wilson to see the planet Saturn through the 60-in. telescope, and Wednesday evening was a gala banquet, with about 800 packing the big Biltmore Hotel Bowl.

Ladies tours of Hollywood, a trip through the orange belt country with luncheon at famed Mission Inn, an all-day boat trip to Catalina, and a visit to the beaches supplemented the general entertainment program. A Spanish troup and a representative of the mayor met the special train on arrival—a band played Aloha and farewell to its departure. Never had so complete, so thorough a program of thoughtful and interesting features been offered a convention as at this. Result was it had the proportion and the dignity and importance a fully industry-wide convention might be expected to have. In attendance even, with a registration of 444 from 27 states and 3 provinces of Canada, and 250 special additional guests from among the contractors of the southwest, the convention ranked among the tops.

George W. Patterson, of Toronto, Canada, was awarded the James H. McGraw Award and Medal for Contractors at the brilliant banquet, Wednesday evening, Earl Whitehorne making the presentation for the awards committee. This too proved an accented moment in the proceedings, and westerners among the audience took pride in having contributed to the N.E.C.A. labor cost data book for whose splendid compilation and perfection Mr. Patterson was selected to receive the award for 1937. The Los Angeles chapter had at one time revised the old Electragist estimating manual, reduced it in content and simplified its arrangement and placed it at the disposal of the national committee of which Mr. Patterson was chairman. According to the citation, Mr. Patterson "proceeded to enlist the cooperation of contractors and estimators, throughout the country, in a methodical, comprehensive recheck and revision of existing cost material and instituted the development of new and additional data, through extensive research and analysis."

Peak Reelected

President Earl Peak of Marshalltown, Iowa, was unanimously reelected president for another two year term and given as unanimous a vote to proceed with his Industry Promotion Committee program. When Louis Kalisher of Brooklyn, New York, decided to retire as vice president, supporters of both Ralph M. Walker, of Atlanta, and of A. Lincoln Bush of New York City sought to elect their respective candidates to the vice presidency and the issue drew itself over the respective union or non-union leanings of the two. But Mr. Bush withdrew his name from the nomination and Ralph Walker was elected. D. B. Clayton, of Birmingham, Ala., and a former executive committeeman was named by the Div. 5 delegation to Mr. Walker's vacant place on the executive committee. Since no one from Div. 1 was present no election on this post could take place. But E. C. Carlson, of Youngstown, Ohio, was reelected to Div. 4; H. C. Evans of Kansas City, Mo., to Div. 7; and Sam Hepler of Seattle, to Div. 10. Detroit was selected as the next convention city on the final day of the convention.

Motor Specialists Meet

Motor specialists from all parts of the country took advantage of the opportunity afforded by the convention to call a special luncheon on Wednesday noon, with W. J. Wheeler, of New York, president of the National Industrial Service Assn. present, and the motor dealers associations of both northern and southern California sponsoring the meeting. J. O. Case, of Los Angeles presided. Clear definition of the aims of the N.I.S.A. and of its relation to N.E.C.A. resulted in a decision on the part of the strong California motor groups to affiliate with the N.I.S.A. as well as the N.E.C.A. A resolution passed the next day exempted from the gross volume basis of computing dues the portions of the contractor's business devoted either to the motor business or merchandising and recommended affiliation with the national associations dealing with those two phases of the industry by any whose business included such activities.

As a special opportunity 300 members of the recently organized Electrical Contractors Exchanges (or associations) in southern California were invited to be guests at the Wednesday closed session. A clever and amusing skit, entitled "A Necessary Evil", written by R. E. Smith, of Southern California Edison Co. (and a former contractor) upon the suggestion of "Brick" Hunter, well known accountant and bookkeeping counselor for contractors in the region, was presented by a group of Edison players.

Another of the strong testimonies that this was an all-industry convention as well as one of and for contractors was the spectacular exhibit of 33 manufacturers, manufacturers agents, wholesalers and utilities called the "Electrical Exposition Extraordinary". The exhibits completely encircled the big ballroom in which the convention sessions were held and both sides and center of the spacious entrance lobby as well. Chiefly of wiring materials and equipment, the displays were particularly keyed to the theme of the convention, "adequate wiring". Both the Edison Co. and Bureau of Power and Light had novel educational exhibits, the Edison booth a series of sight-light test booths used last year at the Cleveland Fair; the Bureau making the most of the extreme contrast between the old dark office of the 1900's and the fully electrically equipped office of today.

What they said:

Since complete stenographic report of the convention will be made available by General Manager Laurence W. Davis in the *"Qualified Contractor"*, publication of the N.E.C.A., and a more detailed account of the individual papers presented will appear in *"Electrical Contracting"* magazine, the following pages will contain significant quotations from the talks presented, quotations which give in a brief glimpse the essence of the message:

Welcome

By A. L. STONE, Chairman, Los Angeles Convention Committee; Executive Committeeman, Division 9, Los Angeles, Calif.

Sometimes we have felt far away from our national organization, and this is an occasion for which we have waited many years and I believe that it was well—when the National Committee decided to bring the Convention to the Pacific Coast. It will obliterate the seeming gap that has existed between the East and the far West. We feel very close to you today and I feel that this meeting will unite us more securely than anything that has gone before.

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Industry Promotion

By EARL N. PEAK, President, N.E.C.A., Chairman, Electrical Industry Promotion Committee, Marshalltown, Iowa

Well, will it work? It will work any place where anyone wants it to work. It can work either through a local Industry Promotion Comittee, or through a League, or in some cases where several cities in a section get together on a program it will work for the district.

Another thought. Use the Voluntary Agreement Plan. It provides for a *review* instead of a *preview* of the bids, with penalties for violation of the bidding rules previously agreed to. Will it work, on a purely voluntary basis? Again I say to you, "It will. You can make it work if you want it to work."

Develop local responsibility. Too many contractors want a free ride. They want to sit back and clip the coupons of association membership without lifting a finger to help. It never has been done and it never will be done. The national can provide the train and lay down the rails. But the local group has to shovel the coal to make the train go.

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Wiring Program

By C. E. SWARTZBAUGH, Chairman, NEMA Business Development Committee; President, The Swartzbaugh Manufacturing Co., Toledo, Ohio

You just don't need an expert to tell you that you won't get results watering your lawn if you use a length of macaroni in place of garden hose.

Even a layman can know that wiring installed only for lighting—lighting as it was known back in "horse and buggy" days—that era of side-burns, rear entrance automobiles and peg-top pants—is hardly adequate in an age of Transatlantic Clippers—Radio—Air-Conditioning and Television.

More important than the technical side of this subject, it seems to me is an appreciation of the fact that we, as an Industry, *have a situation to meet*, and that *the thing to do is to meet it*. . . .

There's no romance to wiring—or wire—so how can you enthuse Mr. and Mrs. John Q. Consumer—or "John" and "Mary" as one of our leading Trade Press Editors calls the Public.

Well, Chick Sale wrote a little booklet called "The Specialist", whose brutal humor changed the back-yard telephone booth into a really important structure, whose architecture, location, size, design, embellishment and adequacy became a matter of grave moment to practically every red-blooded American. Romance? Hell!!! Travel this country today—especially in the South—and observe for yourself the artistry of architecture, design, and finish, of the star and crescent decorated "two and three-holers" that dot the countryside as a result of the joint efforts of a humorist, a benevolent Government and the W.P.A.

Don't tell *me* some smart advertising man isn't going to do as much for Wiring, if given the chance, as Chick Sale did for *his* specialty. . . .

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Utility and Contractor

By W. C. MAINWARING, General Sales Manager, British Columbia Electric Railway Co., Ltd., Vancouver, B. C.

The most important decision in regard to our relations with electrical contractors was, that we would not recognize any individual or company but that our transactions and dealings must all go through the office of the Association. Unless a contractor was a member of this Association he could not possibly secure any work from us. We agreed that all installation work on electric ranges, water heaters, and any other major appliances sold by our company and also by other dealers should be installed by an Association member. In the event of a complaint from a customer regarding any installation work we do not under any circumstances deal with the individual. These complaints, which I might say are exceedingly few, are referred to the Executive of the Association, who have an understanding with us that they will not only investigate the complaint but see that the customer is satisfied. The Association renders an account to our Company twice each month for all of the work done by its members and returns are made very promptly by the Association to the members so that they have no collection problems. An arrangement has also been consummated so that the contractor who is doing work in the home may sign up an order for additional wiring and outlets, secure the customer's signature, and then turn the order over to our company, who will collect in monthly payments or in any other manner designated by the customer. An order is issued at once to the Association and the contractor paid immediately for his work. . . .

Wiring materials in Canada are considerably more expensive than in this country and in the early part of the current year the Executive of the Association felt it was nec-

Candid views of some of the speakers in action. Top to bottom: W. C. Mainwaring, Vancouver, tells a broad gage utility program; C. E. Swartzbaugh, illustrates with one of his special stories; L. W. Davis, managing director NECA, confines his remarks to greetings; Harry Harper, Graybar, reminds that wholesalers are only human; Dr. Henley of U.S.C. making his inspiring challenge; Louis Kalischer, vice president NECA, attributes his own success to the returns from cooperation; Ralph Walker, new vice president, urges a fair trading code of ethics for distribution between all branches of industry

essary to inform our company that a substantial increase in the cost of electrical range installations would have to be made. After a thorough discussion of this problem, during which time the Executive of the Association held many meetings with the local Inspection authorities, a simplified system of wiring was approved and adopted so that the prevailing range installation price was decreased instead of increased and the contractors enabled to make a larger profit than was the case previously. . . .

We have on record many cases where members of the Vancouver Electrical Association have gone out of their way to prove to a customer that we were really endeavoring to extend the highest standard of service, and I would like to submit to your Association that a concerted move on its part to bring about throughout the continent a realization of the value of the services rendered by utility companies would not only be appreciated by these companies but would be a real contribution to the industry itself.

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Facing the Market

By EARL WHITEHORNE, Editor,
Electrical Contracting, New York City

Obviously the gigantic job of modernizing the wiring of America cannot be done by just going on as we are. Either we must have a lot more contractors to do the work or we need different methods by which existing contractors can step up their production. And it is plain enough that the answer is not the mere multiplying of contractors. We have plenty now. But they have got to snap out of the past and recognize that times have changed. We're living in a new world, different from that of ten years ago, and the old methods no longer fit. The present emergency is clamoring for new methods and it is not very hard to see what kind. . . .

These wiring jobs in homes cannot be done one at a time. There are too many of them. But a group of contractors in any city can set themselves up each to rewire a thousand jobs a month, sold in advance, for completion on a schedule. And they can be sold. And with unit crews, supported by rolling shops, this rewiring of houses can be made big business and a profitable specialty over a term of years, for qualified contractors, competent and responsible.

The present spectacle of the entire industry of qualified contractors frankly turning their backs on the house wiring business, is not only absurd but scandalous. For no industry is big enough to turn its back on 22,000,000 customers without courting disaster. . . .●

Then to relieve the public need and satisfy the popular demand, the government will go into the wiring business. Or, long before that, the power companies will jump in—as they have done before. Or, the big manufacturers will send out high pressure wiring crews—as they have done before. Or Sears Roebuck or somebody will set up a syndicated nation-wide wiring chain. And then what will happen to the electrical business as it is now established?

There is more in the situation, however, than the building of public demand for more and better wiring. When this demand comes, it will expect wiring by new methods—and maybe new materials—at a new price. And the contractor is not ready—nor is the wholesaler nor the manufacturer nor the power company.

Frankly, I see his emergency as the greatest challenge that the leadership of this electrical industry has ever faced. The contractor is on trial—but not alone. All electrical men are on trial—facing the same issue. . . .

It is too bad that modern business is so complex. But contracting is no longer just a matter of local competition. The real difficulties come from national influences—license laws, code changes, inspection, installment, financing, R.E.A. rulings, co-op wiring, Federal power projects, power industry policies, economic conditions, labor relations—to name a few.

Most contractors don't want to bother about these things. "Leave me alone!" they say. God help 'em! They are alone! That's why they are in trouble.

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Taking Wiring to the Public

By WALTER L. STICKEL,
Department of Adequate Wiring Design,
The Electrical Development League of Southern California, Los Angeles, Calif.

You have an important role in the adequate wiring campaign. You are the leading man in the play. It's up to you to change your name from electrician to electric counsellor. The public wants and needs your advice and recommendations. They need to be reminded of and helped by this great electric age. They have to be taught the advantages of the electric range, water heater, refrigerator, I. E. S. lamps—adequate wiring. With the right information they'll demand what we have to offer.

(See ELECTRICAL WEST, Oct., 1937, p. 35)

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Highway Safety Lighting

By A. V. THOMPSON,
Illuminating Engineer, General Electric Company, San Francisco, Calif.

Almost all warnings are infinitely superior to the scant warning of danger ahead provided by our headlights. The railway engineer traveling along at 60 miles an hour has block signals to warn him of danger 60 seconds before he reaches it—plenty of time to bring his train to a halt.

But the motorist has but a short one to five seconds warning of dangers that lie in his path, or approach him from any side. It is the seconds that count in driving at night.

The present average automobile headlights enable the average driver to see the average "dark" object about 150 feet ahead. Here is how the trap is sprung. A car going 50 miles an hour goes 73 feet each second. When a "dark" object suddenly looms up only 150 feet ahead, it means that there are but two seconds in which to see, to comprehend the danger, to decide, to take the foot off the accelerator and slam it on the brake, to judge the size and direction of the object, to blow the horn, and to turn the steering wheel —all at once. . . .

The fact of the matter is that the headlight, accurately maintained and adjusted to avoid glare, will always be necessary, especially on the greater percentage of our highway systems, which will probably never be illuminated otherwise. But on that limited mileage of heavy traffic highways with their night accident zones we need permanent lighting.

How can there be illumination without glare? The answer is to illuminate the road not from the car but from over the car. This has two separate and distinct effects. First, it provides illumination at distant points on

Informal—(top to bottom) Ralph Walker talks with Mitchell, Buffalo, Wilson, Washington, and Golk, Chicago. Motor men Frank Boyd, Oakland, and Wm. Wheeler, New York. Host A. L. Stone, Los Angeles, and medalist G. Patterson, Toronto. Seattle's Sam Hepler and Washington's (D. C.) Bob McChesney. Hard working local committeemen Art Rowley, Herb Evans, Joe Newitt, and H. Bayers. Texans Hood, Delaney, Copeland and Jamie Jamison in the midst of the ladies. Just a group looking over one of the 33 exhibits of manufacturers products surrounding the convention hall

Top—left to right: Glenn Arbogast and Harold Thrane, Los Angeles, tied for a golf cup, and Arbogast lost the toss. Northwest's delegation—S. G. Hepler, G. C. Burke (Seattle), R. A. Montgomery (Portland), L. J. Benedetti, and R. D. Horning (Seattle). They were hosts to the tour on its homeward journey. Looking down one of the aisles of the Exposition Extraordinary

the road that the headlight is absolutely incapable of reaching. Second, it adapts the eye of the driver to higher levels of illumination, and the dazzling effect of oncoming headlights is greatly reduced. It is, of course, not economical to illuminate the road to a point where another headlight can be viewed with the indifference one gives it in daylight, but there is a welcome relief from the temporary blindness that sends all too many cars into collision or into the ditch.

The overhead light has the further advantage of revealing the entire road, and not merely the narrow streak that lies directly ahead of the car. Each driver can more easily keep in his own driving lane.

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Competitors Cooperate

By J. E. CHANDLER,
Chandler Electric Co., Los Angeles, Calif.

Lack of co-operation between competitors is usually due to misunderstanding. This is the primary cause for most of our human difficulties.

The difficulties that arise among the various groups, utilities, manufacturers, jobbers, contractors and labor, are due to lack of understanding of our mutual problems.

To get better cooperation among competitors it is absolutely necessary that the five branches of the Industry gain a sympathetic understanding of our mutual problems and try to find a solution. I sincerely believe that the Code of Fair Competition, with the four other branches of the Industry participating, will be the means of removing the misunderstandings that exist and bring about better cooperation among competitors. I wish to bring to you, for example, the fact that it took nearly two years to secure the signature of seventeen competitors on a Fair Trades Agreement in this city, but so much confidence and cooperation has been displayed it gives me the greatest of pleasure and satisfaction to announce that in the past ten months this number has grown to approximately four hundred.

Two years ago it was almost unknown to find one contractor entering another contractor's office. Today it is no uncommon thing to see five or six competitors meeting and going to lunch together. I attribute this to the fact that a great deal of the misunderstanding that existed two years ago has been removed. Gentlemen, I wish to make this statement: We are no longer working for the Association; today the Association is working for us. By adopting a Voluntary Code of Fair Competition, and by attempting to stabilize reasonable percentages of mark-up, we have been able to arouse an almost unbelievable amount of cooperation among competitors in this area.

The California Unfair Practices Act has the effect of inducing competitors to cooperate, because it permits us to ascertain through a cost survey the overhead which must be recognized by our competitors in computing their costs. This legislation has stimulated interest in Association activities of all kinds and has aided us in securing cooperation, because our members feel that we have something tangible in the way of eliminating destructive competition and which will finally put dollars in the pockets of all of us.

Cooperation among competitors will steadily increase as long as they are assured that it is profitable, and, after all, profit is the only excuse for cooperation.

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Contractors' License Law

By ROY M. BUTCHER,
Electrical Contractor, San Jose, Calif.,
Chairman, State Contractors' License Board

A simile which can aptly be used is that of the Highway Patrolman who may stand on the shoulder of the highway, beside his motorcycle, but never so much as flags a motorist all day long. His record at the close of that day would be: No arrests, no citations, no warnings. And yet, everyone of us knows that the traffic which passed by that officer was automatically slowed down by the very fact that he was present. The symbol represented by his presence was important. It meant the power of the law to punish the violator. . . .

In other words, 1,536 people, now or in the past, living in California, have so conducted themselves that they are now barred from securing a contractor's license. In view of this large number, it is no wonder that the Registrar of Contractors in Arizona has frequently remarked that his state was forced to adopt a similar law to protect itself against the influx of undesirables who felt it good judgment to leave California.

It is our feeling that the license law is a tool which the construction industry has forged out for itself, but it is not a perpetual motion machine. The value which can be secured from it depends upon the amount and the skill of its use. (See ELECTRICAL WEST, Aug., 1937, p. 25 for complete story on the law.)

Past Presidents Clyde Chamblin, San Francisco, and L. E. Mayer, Chicago, were still working steady "wheelhorses" for the contractors

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Wholesaler and Contractor

By HARRY L. HARPER,
Pacific District Manager,
Graybar Electric Company, Los Angeles, Calif.

But after all, cooperation is not a one-way street, and all the traffic violations on that street are not made by wholesalers alone. I think we should all make allowances for omissions, and in making allowances give due credit for commissions. In other words, if we adopt the spirit of give and take, we will all be more prosperous, more contented and happier.

Now I know that there are many things you, as contractors, would like to have us, as wholesalers, do. We would like to cooperate. We want to cooperate. It seems to me that all of our activities and actions of the past would indicate that is so. In many cases, however, there are two laws with which to be reckoned; one is the law of the land, and the other is the law of economics. We believe, as you believe, that it does not pay to attempt to get around either law, but rather try to operate your business (and it can be so operated) well within the limitations imposed upon you by these laws.

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Fair Trading Policy

By RALPH M. WALKER,
Walker Electrical Co., Atlanta, Ga.
Chairman, Distribution Committee, N.E.C.A.

Note—Mr. Walker went into considerable detail as to the need for and the steps recommended in the formation of a fair trading policy similar to that recently enacted in Great Britain. As a result of his discourse a motion was made and carried that a committee be appointed to confer with the other branches of the industry and to seek to prepare a code of trading ethics to which members may subscribe as individuals under the laws of this country.

Editor's Note—Several other addresses deserve more extensive reporting because they contain valuable suggestions and ideas which could not be compressed into the space available. Already set in type, they will be published in the next issue. Among these are such vital topics as: "Industrial Electrical Modernization," by K. D. White, of Columbus, Ga.; "Meeting Motor Repair Shop Problems," by Wm. J. Wheeler, president of N.I.S.A., New York City; "Apprentice Training," by J. Walter Collins, secretary, Electrical Contractors Assn., Chicago; and "Association Work and How to Keep Members Interested," by J. J. Newitt, secretary, Southern California Chapter, NECA, Los Angeles. By request the declaration of the customer, from "I am Your Customer," by Wm. A. Cyr, associate editor, ELECTRICAL WEST, will also be included.

EDITORIAL

No "Error of Pessimism"

DURING the past month the country has suffered from a bad attack of a malady which in financial circles is known as the "error of pessimism." Uncertainties in the over-all business picture created a psychological situation which brought on a violent break in the stock market. This in turn affected public purchasing of all goods and commodities.

Basically there are no reasons for these germs of pessimism to infect the electrical industry and displace the healthful glow of confidence which has permeated this business for the last two years. As a matter of fact, forces which should increase this confidence are evident on all sides, particularly here in the far West. There has been no letup in the increasing demand for electric power as mirrored in peak loads and kilowatt-hour output of the utilities. This is reflected in several recent announcements of construction of additional generating facilities and others are in the planning stage. Distribution systems are still over-taxed and 1938 utility budgets will include large appropriations to remedy this situation. One utility reports range sales running 500 per month in its territory, a second states that sales will total 7,500 units this year and 12,000 next year. Several companies are working on intensive *national* promotional programs to secure new industrial load. There is every indication that declining commodity prices will break the buyer's strike which has curtailed residential building.

In the light of these favorable factors there is no cause for pessimism, inertia or recession. Further forward progress is certain and the confidence of the industry in the future should not be shaken.

J. D. Ross and Bonneville

AS WAS generally expected, the appointment of J. D. Ross as Bonneville Administrator was announced early in October by Secretary Ickes. Mr. Ross is well known to the electrical industry of the country, particularly in the Northwest, through his longtime managership of Seattle City Light and his association with the Public Ownership League of America. Recently he has extended his recognition nationally through his position on the Securities and Exchange Commission and as a member of the administration's "brain trust" on power policy.

ELECTRICAL WEST has known Mr. Ross a long time and appreciates his many fine qualities. Liking him personally, it has disagreed with him openly on his fundamental policies with respect to the power business, for Mr. Ross is, first of all, a public ownership advocate. Never for one minute, since the inception of Seattle's municipal plant in 1904, when he was designing and constructing engineer, has he diminished his active advocacy of government ownership from the generating plant to the customer's premises. The industry has every reason to believe that he will continue this advocacy in the larger field now made available to him through the Bonneville administratorship.

In the second place Mr. Ross is politically minded to a degree. In his 33 years with City Light, 26 of which have been as superintendent, he has been forced often to act because of political considerations rather than engineering or economic motives. In the broader field revolving around Bonneville, he will have an opportunity to show whether this will be an exception to the generally recognized rule that governmental agencies are unable or unwilling to divorce politics from their conduct of the power business.

Definitely on the asset side for the privately owned power industry in the Northwest is the fact that Mr. Ross is an able and practical utility operator of long experience. He knows thoroughly how little of the cost of electricity at the customer's meter is contributed by generation and how much of this cost transmission and distribution are responsible for. He knows further to what extent the price of electricity to the customer is influenced by load factor and volume of use, and the part played by appliance selling and promotion in determining these two important factors. When he gets into the harness at Bonneville, he may be expected to make these points and their implications clear to that portion of the public at least which has been loathe to accept explanations from the spokesmen of the private companies. To many of these people Mr. Ross' pronouncements will be gospel and, at last, the industry may expect to have some of the fallacies preached by dreamers and theorists supplanted with facts about the business which will benefit the entire electrical industry.

If Mr. Ross advocates the formation of utility districts and municipal systems to retail the power which he will have for sale, he may be expected to make clear to the public what it will be up against if it goes into this business. He has said, and his Seattle record indicates this to be a firm policy with him, that he does not favor competition between public and private systems. If a community desires to enter the power business, he urges it to buy out the existing private system, for he appreciates that competition is costly and unsatisfactory, particularly where it involves paralleling. This policy will place the fight between private and public power in the

Northwest, if fight there is to be, on an open and aboveboard basis, permitting the facts on both sides to be brought to light so that the final decision will rest with an informed electorate. No matter what the outcome, this will result in less damage to owners of private utility businesses than if the administration should advocate direct and subsidized competition with them.

ELECTRICAL WEST salutes its friend, Mr. Ross, in his new position. His is a post of honor and responsibility. ELECTRICAL WEST looks forward with interest to a more detailed delineation of his policies. It believes that Mr. Ross will find it desirable from a business standpoint to deal with the existing utilities openly and honestly. If he does, there can be little complaint, for there should be a place in the economic picture of the Northwest for both Bonneville power and the existing private companies which have served this region so well at rates which have attracted national attention because of their cheapness. Furthermore he should find these companies ready and willing to cooperate. There is no maliciousness in Mr. Ross' makeup, and we cannot believe that he will willfully attempt to destroy the splendidly managed private utilities in the Northwest which have been so effectively developed in the public interest during the past 50 years.

Back Into Harness

EARL PEAK, of Marshalltown, Iowa, talks a plain cornfed philosophy of the real America beyond the city limits. Out of the soil of good solid human experience in the small city his doctrine of constructive mutual help for industry promotion is nurtured. It grows by the same force of driving perseverence that tamed the plains and keeps them producing the food crops of the nation. It has purpose and it is driving toward it.

In accepting reelection for another two years as president of the National Electrical Contractors Association, Earl Peak did not enlist alone. He immediately signed up the industry in all of its branches to join his brigade and continue the march shoulder to shoulder. And he did it in a way that left no choice but to stick with him for the duration of the job. The Electrical Industry Promotion Committee is its vehicle, but the unity and forward march of the industry is its real objective. An industry that looks forward together at a goal, that tramps the weary hot miles together toward it, that fights shoulder to shoulder for it, will have no time to quarrel and bicker about petty internal maladjustments. If there are cooties, everyone will share in suffering or scratching them. But no cootie is going to stop the drive on ahead.

When he mustered in his veterans of former battles in the closing talk of that remarkably practical and useful convention of the N.E.C.A. in Los Angeles, he had a special word for them. Earl Peak asked them to get back into harness in local association work, in local industry activities, and to be generous and tolerant of the youngsters just coming into the brigade. He made the very practical suggestion that they let these youngsters have a few jobs; they would believe more in the sincerity of the older men's motives if they saw generosity in their actions as well as honesty in their words of cooperation. A wholesome difference in this, from the cantankerous and sarcastic attitude it is so easy to slip into after discouragement and disappointment with association affairs over years of trials! But it is consistent with the hardy philosophy of the farmer who has seen crops blighted and risen to plant again with hope for better treatment next season.

It is a good thing for the electrical industry that Mr. Peak is willing to drive his industry forward for another two years. The industry needs that type of rugged visionary, of practical neighborliness and good sense. He has salvaged the electrical contracting industry from discouraged self pity, given it a new dignity and purpose, and he will go far toward bringing back something of the family self help to this entire industry which rapid growth and too busy executives have let slip away in the recent years.

Time Payment

WISE heads in the financing field are quietly insisting that terms on appliance sales should be shortened and stiffened, that the "pump priming" with long terms and small payments can be carried too far. It is a gentle warning, and it is spoken in a soft voice lest a note of panic creep into the very sensible call for a sounder financing basis. No one wants to start the fear to which a stern warning might lead. Yet it is true that term financing has been carried on too thin ice for a long period and that a start must be made somewhere toward a return to fundamentals that cannot eventually be set aside.

The purchaser of an appliance should at any given time have enough stake in that appliance to throw his weight toward continuing to own it, rather than permit the temptation to let it revert to the seller. That fundamental is rooted in long human experience. On a rising, optimistic market it can be ignored because the factor of good feeling and of prosperity is thrown on to the scale in favor of retaining the purchase and paying it off. But it is always better business to obtain enough down payment to establish a sense of possession, and derive monthly payments quickly enough to build that sense of ownership toward the achievement of full possession.

Sales may be a little harder to make, but they stay sold if the terms are in line with a sound financing policy.

News of the Industry

JAMES D. ROSS NAMED BONNEVILLE HEAD

James Delinage Ross, superintendent of Seattle City Light, last month resigned his position as commissioner of the Securities Exchange Commission to become the first Bonneville administrator. Announcement of the appointment was made by Secretary of the Interior Harold L. Ickes shortly after President Roosevelt had visited the dam.

Under legislation passed at the last session of Congress, Mr. Ross is charged with the duty of administering the transmission and marketing of the hydro-electric energy produced and of supervising construction of the supplemental facilities necessary for transmitting, distributing and marketing the power. Operation of the navigation and power-generating features of the dam itself will be in the hands of army engineers.

In accepting the appointment, Mr. Ross indicated to the public that he would do "what I think the administration wishes me to do." This, he said, would be, first, to supply cheap electricity to farms and homes of the Columbia River basin and, second, to serve established industries "at rates that will stimulate our present industry and increase payrolls."

Mr. Ross is principally noted for his development of Seattle City Light into one of the foremost municipal electric utilities. Born in Chatham, Ontario, in 1872, he was educated in the Collegiate Institute there. Upon graduation he taught school for a time, then, deciding to join the Alaska gold rush, walked with two companions from Ontario to Alaska and back to Seattle, where he soon went to work for the new municipal light system. Except for several short interludes, he has been connected with the system ever since—a total of 35 years. Indications are that he will remain still longer, even in spite of his new job.

Mr. Ross has also held several other positions. At one time he was a member of the New York Power Authority and consulted with Mr. Roosevelt, then governor, on the St. Lawrence waterway. In 1935 he was appointed chief engineer of the power division of the Public Works Administration. Resigning this position last year he was then named to a membership in the SEC by the President.

BONNEVILLE'S STATION SERVICE unit, operating under a 40-per-cent, or 25-ft., head is now serving about 800 kw. to the operators' village, the power house and some of the construction load on the lock. Majority of power for other construction is still carried by Northwestern Electric Co.

JAMES D. ROSS

HEARING SET FOR P.G.& E. FEATHER RIVER PLANTS

Pacific Gas & Electric Co.'s application for a preliminary permit to construct six major hydro-electric developments on the north fork of the Feather River in Butte and Plumas Counties, Calif., will be heard by the Federal Power Commission Nov. 15. The projects have an aggregate proposed installed capacity of 368,000 kva.

According to P. M. Downing, vice-president and general manager of the utility, the proposed plants would be undertaken "with due regard to the Central Valleys Project." He maintained that P.G.& E. still desires to absorb all power generated by the valleys project at Shasta Dam.

CAT CHASES RATS --- RATS ARE ELECTROCUTED

Who will bell the cat?

A merchant of Revelstoke, B. C., possesses an ultra-modern feline which protects his store basement against rats with unusual efficiency. The cat exterminates the rodents by chasing them up a wooden post into a small hole in a steel switchbox where they are instantly electrocuted.

The cat's ingenuity was discovered when an electrician was called to investigate the cause of a "peculiar" odor emanating from the switchbox.

TWO UTILITIES TO REDUCE RATES THIS MONTH

Effective with the billings after Nov. 26, residential and commercial rates of the Northwestern Electric Co. and Portland General Electric Co. will be revised downward to the tune of approximately $331,000. The new schedule, arrived at after negotiations between N. G. Wallace, Public Utilities Commissioner of Oregon, and the companies, will be effective in the entire area served by the two companies—Portland, other parts of Oregon and Washington.

Principal changes in the residential schedule were the lowering of the top step from 5½c to 5c and the elimination of the former rate's demand feature by which the top step of customers having demands larger than 600 watts was lengthened by one kw.-hr. per 25 watts of additional demand. The new rate is 5c for the first 34 kw.-hr. regardless of demand; 3c for the next 40, and 1.8c for all over 74 kw.-hr. per month.

In the commercial schedule the demand feature was retained but the steps were shortened and the price reduced in both primary and secondary schedules. Primary schedule, formerly running from 5½c down to 2½c, now runs from 5c to 2½c. Secondary schedule has been dropped from 3c-1c to 2½c-.9c.

OREGON POWER COMPANIES VALUED AT $96,430,000

Valuations of Oregon electric utilities for taxing purposes this year totaled $96,430,000, the state tax commission announced last month. This was an increase of $3,800,000 over 1936.

Largest individual gain, nearly $1,500,000, was recorded by Portland General Electric Co. Other major gains were Northwestern Electric Co., $811,500; the California-Oregon Power Co., $744,847; Mountain States Power Co., $247,201; Pacific Power & Light Co., $182,150; Eastern Oregon Light & Power Co., $116,811, and the West Coast Power Co., $101,500.

SOUTHERN CALIFORNIA EDISON CO.'s gross earnings for the twelve months ending Sept. 30 were $42,408,729 as compared with $41,380,803 for the previous twelve months. Net earnings showed a drop from $25,979,994 last year to $25,296,986 this year.

JUDGE HALTS EVIDENCE IN HETCH HETCHY CASE

Testimony in the Federal government's case against the City of San Francisco on grounds that the sale of Hetch Hetchy power to the Pacific Gas & Electric Co. was in violation of the Raker Act came to an abrupt end Oct. 21, three days after the trial opened, when Federal Judge Roche demanded the submission of briefs. Indications at the time were that the city would lose on every score.

"The court is still open to the idea of allowing the city to make a showing for the record," the judge said, "but I think the government's case is the controlling factor."

Ten days time was allowed the government in filing its brief. The city has 30 days after that date. Oral arguments are then scheduled to begin Dec. 13.

Trend of the trial, which had previously been limited to the sole issue of Raker Act violation, was, from the beginning, away from the city in favor of the government. This was most strongly indicated on the final day when William J. Licking, assistant to U. S. Attorney Frank Hennessy, said that the suit was not to enjoin the city on government granted lands "but is a request to the court that the city observe the conditions of the grant not to sell power for resale." Thereafter, practically all defense testimony was ruled inadmissible.

EMPLOYEES UNION MEETS; N L R B ORDERS VOTE

Five days after the California Gas & Electric Employees Union met in Sacramento Oct. 16 for its first state-wide meeting, the National Labor Relations Board ruled that the Pacific Gas & Electric Co. is subject to the Wagner Act and ordered an election among 7,600 so-called physical workers to determine collective bargaining representation. Balloting, according to the decision, was to begin within 60 days.

Sets Precedent

Held to be of precedent-making importance to Western utilities, the board's ruling discounted P. G. & E.'s contention that it was not engaged in interstate commerce and therefore not under the board's jurisdiction. The decision said: "We find that the question of representation in connection with operations of the company has a close, intimate and substantial relation to trade, traffic, commerce, transportation and communications among several states and with foreign countries and tends to lead to labor disputes burdening and obstructing commerce and the free flow of commerce."

The decision was looked upon as a victory for the Committee for Industrial Organization's United Electrical and Radio Workers of America union which had requested that the election be confined to such physical workers as linemen, salesmen, meter readers and bill collectors. However, the independent California Gas & Electric Employees Union showed little concern either before or after the ruling. Meeting in Sacramento, it was interested only in perfecting the five-and-a-half-months-old organization.

Dues Raised

Passed was a motion to raise the dues as of Jan. 1 from 25c per month to 50c. Rejected by a close majority was a previously approved proposal calling for a $5 initiation fee from any person applying for membership after Dec. 1, a $10 fee from any person employed by P.G.&E. for a year applying after Jan. 1. Passage of this bill is, however, expected in the near future.

Placement Committee Proposed

Also rejected, though, officials say, not permanently, was a resolution calling for organization of a so-called placement committee, a feature not yet tried by any union in the country. Under terms of the resolution members of the various locals were to set up committees which would study the individual members and their abilities. Cooperating with the personnel department of the utility, the committees were then to assist in keeping round pegs in round holes and in singling out those who merited promotion.

By-laws Amended

Two by-laws were amended. Stipulation was made that a union member, discharged by the company, can not lose his membership unless his local and the board of directors find the discharge justified. To strengthen the democratic principles of the union, delegates to the meeting voted that the board of directors can deprive a union member of his card only with majority approval of the member's local.

Reporting on union finances, the secretary-treasurer stated that the accounts, audited by a certified public accountant, were in good order and that the financial condition was healthy.

PUGET SOUND POWER & LIGHT CO. recently secured franchises to construct power lines along a number of streets and roads in the vicinity of Kelso and Castle Rock, Wash.; also, for lines over several roads in Grays Harbor County.

TAXES LEVIED BY COUNTY UTILITY DISTRICTS

Special taxes, ranging from one-half to two mills, will be levied in seven eastern Washington counties in accordance with budget requests for funds to operate public utility districts in those counties in 1938. The taxes were sought by the various public utility district commissioners at public hearings last month.

Taxes of two mills will be levied in Okanogan, Lincoln, Chelan and Douglas Counties, three-quarters of a mill in Stevens and Ferry Counties and one-half mill in Pend Oreille County. Although some taxpayers appeared at the hearing to protest any levy at all, they were overruled by a majority.

SACRAMENTO SEEKS TO BUILD HYDRO PROJECT

Sacramento Municipal Utility District has filed application with the Federal Power Commission for a preliminary permit to construct a 201,000-hp. hydroelectric project in Eldorado County on Silver Creek and the south fork of the American River. Proposed construction is to be in two steps.

First step consists of the construction of two storage reservoirs connected by a tunnel, a diversion dam, a conduit and a power house. Installed capacity would be approximately 50,000 hp. Ultimate development calls for enlargement of the two reservoirs and construction of two additional diversion conduits and power plants.

BUSINESS INCREASES FOR WASHINGTON UTILITIES

Washington utilities, both public and private, showed a 15 per cent increase in business for the seven-months period ending Aug. 1, the State Public Service Dept. reported last month. The number of kw.-hr. increased from 2,268,893,231 to 2,613,812,596; revenues increased from $30,873,668 to $33,969,110 or 10 per cent, and customers increased 3.98 per cent to 445,080 families.

While the use of electricity was going up, however, rates, except in farm classes, were going down. The average farmer paid 2.48c per kw.-hr.; the city resident, 2.58c; commercial, 2c; street railway, .9c, and street lights, 2.16c.

TEMPORARY CONTRACTS were being negotiated last month for small blocks of Boulder Dam power to be used at Kingman and Needles, Ariz.

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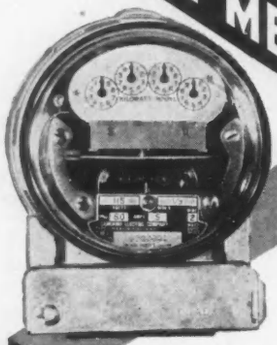

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P. C. E. A. SECTIONS REPORT FIRST MEETINGS; ALVORD POINTS TO INDUSTRY'S UNIFIED INTERESTS

Ground for the year's activities of the Pacific Coast Electrical Assn. was broken last month. At conclaves held in San Francisco and in Santa Monica, the Northern and Southern Section members broke up in small groups to survey problems in their respective fields. Out of these group meetings came outlines of the industry's important problems, to be studied at once.

Mutual dependence of the industry's component parts, and the Association's duty of promoting the smooth, mutually beneficial interaction of these interests were emphasized by President R. M. Alvord in his opening address at both conclaves.

What the Association Means To the Industry

By R. M. ALVORD
President, Pacific Coast Electrical Association

Repeatedly we hear reference made to "our industry" or the "Electrical Industry." These are phrases which slip so easily and frequently from the tongue, that we sometimes use them without realizing the scope of their meaning. Just what is this "Electrical Industry"? Is it something definite and tangible; or, is it just a pleasant sounding group of words? Let us see! First, consider that group of men known as electrical contractors. Each contractor is in business for the purpose of earning a livelihood for himself and his family, and in this respect, his interest is individual and self-centered. However, he finds not only that his business progress is affected by the policies and activities of all other contractors, but also that he has many problems in common with them, in particularly his relationships with those engaged in other electrical activities. Therefore, the contractors find themselves united by a common bond into a clearly defined group or branch.

The dealers present a parallel to this picture, and the wholesalers, manufacturers, and utilities are very similar—the only difference being that the families that must be supported are their corporate families, or stockholders. We have, therefore, several separate and distinct branches, each performing a clearly defined function, but we do not yet have an industry. Each branch is dependent upon all of the others. Without wiring facilities, or current consuming devices, the power generated by the utilities would have no market. Without dependable and low cost power, there would be no traffic in appliances or wire. Each branch has a separate and distinct function to perform, but each of these functions is vital to the continuation of the others. So we come to the conclusion—that we have, without question, an electrical industry—its being the composite of these separate, necessary functions.

As soon as there are distinctive, but interlocking interests, there is need for a forum to discuss problems relating to the industry as a whole, and for an agency to promote activities that are of common benefit. This, in the electrical industry, is the function of the P.C.E.A. There is no belief that it could replace the groups which now serve the industry branches, nor that it should attempt to undertake any programs that could be performed more effectively by individual companies.

There are, however, many instances where information is to be taken to the public—information which is not the message of a single company, or a single branch, but is the message of the industry as a whole. Such instances create for the industry's association exceptional opportunities to serve.

Administrative Services Section

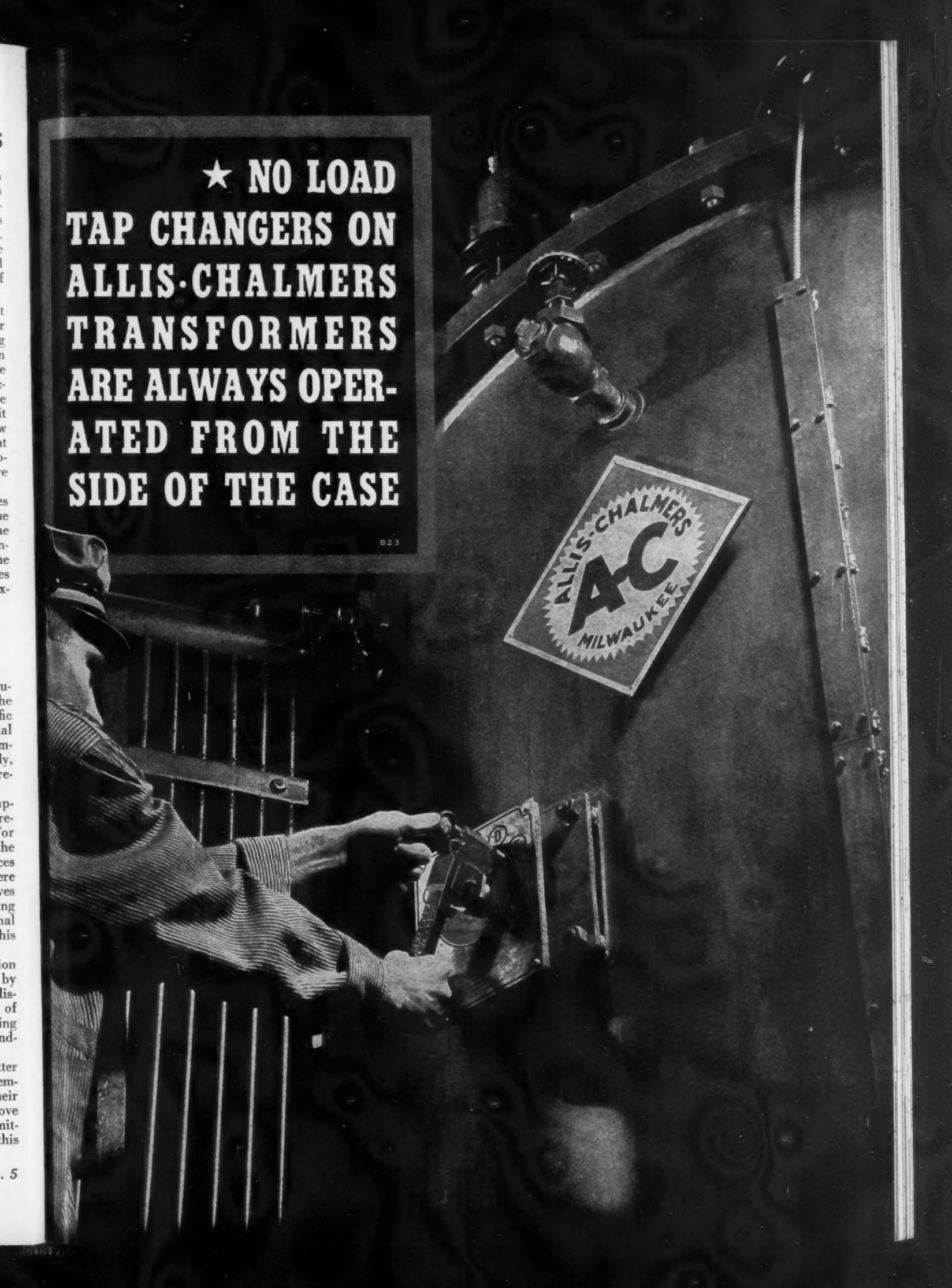
By HARRY C. ROSS, Chairman

Discussions at the two conclaves coupled with reports completed during the previous year indicate certain specific problems which demand additional study if our relations with our customers are to be improved further. Briefly, these are covered in the following remarks.

There are certain differences in appliance servicing practices which require reconciliation. There is need for a more complete understanding of the utilities' responsibilities and practices on the part of dealers generally. There is opportunity for dealers themselves to take over more of the servicing work. Also the utilities need additional information on the actual cost of this service.

By application of the information brought out in the report completed by last year's committee, there is a distinct possibility for simplification of paper work attendant with handling customers' applications through a standardization of forms.

It is generally agreed that a better coordinated program of supplying employees with information vital to their jobs and to the industry would improve customer relations. A special committee has been formed to investigate this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problem and perfect such a program.

As in every business the handling of credit information is important in the utility business, particularly as it affects the attitude of the customer toward the company. The problem has many ramifications and a special committee will investigate present practices, not only of the utilities but of other branches of the industry as well to learn if improvements are possible.

Needless to say, personnel is a pertinent matter today and the electrical industry is not free from its problems. At our conclaves, personnel men from outside the industry were brought in to give us the benefit of their experiences. A valuable interchange resulted, indicating that this is a desirable procedure. An outside viewpoint is frequently beneficial and it is hoped that this practice can be continued.

Business Development Section

By H. C. RICE, Chairman

In addition to an exceptionally cooperative spirit, decided tendencies were evident toward broadening the scope of discussions and toward soliciting outside viewpoints.

Lighting

Advanced was the very practical idea that a bibliography, as it were, be assembled listing all courses and materials available for use in training men, both in the electrical field, related fields such as architecture, and schools and universities.

Partly to eliminate costly demonstration, partly to do a more satisfactory job of public education, would be the purpose of a lighting institute, suggested as a means of demonstrating equipment and methods. It was felt that such an institute should be undertaken by a group other than the Association.

Air Conditioning

Agreeing that air conditioning has captured public imagination, this group, after listening to outside opinions, recommended a study to clarify the terms involved, list suitable equipment and its possible applications, prepare a weather map of California, etc.

Appliance Merchandising

Major appliances were considered in order. Weak selling at the point of contact, that is the dealers' stores, was regarded as a prime evil. Investigation of the best way of effecting sales training was proposed.

Adequate Wiring

Avoiding argument, the group agreed that 90 per cent of all buildings are inadequately wired. Emphasis was laid on dramatizing this story, particularly through channels which reach outside the industry to the public.

Commercial-Industrial Power

Data on industrial heating and industrial welding, especially West Coast installations were regarded as the two most important needs of the hour. Steps to fill these, such as by bulletins, were proposed.

Advertising

Information, it was agreed, remains the main problem of the advertising staffs. Members urged that no means be overlooked to keep ad departments informed of new, unusual, dramatic applications of electricity.

Operating Economics

The report of this group will be found in the Engineering Section, page 45.

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Error Made in Air Conditioning Report

A typographical error made in a recent Bureau of Foreign and Domestic Commerce report on the effect of air conditioning equipment on urban water supplies was corrected last month by General Electric Engineer R. S. Thurston before the growing public misunderstanding could threaten further harm to the industry.

The mistake occurred when the report quoted G. E. engineers as saying that 1 h.p. of air conditioning, using water at 75 deg. temperature, would consume approximately 100 gal. of water per minute. According to Mr. Thurston, the word should have been "hour".

Admitting the error, N. H. Engle, acting director of the bureau, adds that on the basis of this correction the present water-using air conditioning equipment of the country, running twelve months, 24 hr. per day, has a potential gross water demand of more than 151 billion gal. annually instead of the 700 billion gal. reported. Since no system operates on a 12-24 basis, however, actual consumption is only about 13 billion gal.

●

DEPARTMENT OF PUBLIC UTILITIES of the City of Tacoma, Wash., has been authorized by the city council to construct a 13,000-kva. feeder transmission line from the Tide-Flats substation. Appropriated for the installation was $56,000, covering the cost not only of construction but also of necessary transformers, meters and switches.

●

EVEN THE HUMANE SOCIETY approves the new electric prod recently introduced at the National Stockyards in East St. Louis, Ill. Invented by Roy McGaughlen, Illinois trucker, who attached an electric coil to a broomstick, the prod is used to shock balky animals into life.

Too little have we valued the load of responsibility which electrical wiring bears. Yet it delivers our electrical comfort without stint or hesitance... In these modern days the name GUARDIAN *is that by which* QUALITY *is specified.*

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Reliable Cable Grips are now available in a full line—

Reenforced Pulling Grips
Plain Pulling Grips
Single and Double Eye Luffing Grips
Single and Double Eye Split Grips

Let us supply you with the right grip for any standard requirement.

Manufacturers of cable grips for twenty years.

Our long experience in the manufacture of standard and special cable grips fits us to handle your special problems and to supply you quickly with quality grips.

Write for Bulletin

Reliable ELECTRIC COMPANY
OVER 25 YEARS SERVICE TO THE UTILITIES
3145 CARROLL AVENUE • CHICAGO ILLINOIS

B. C. POWER COMPANY ENLARGES FACILITIES

British Columbia Electric Railway has decided to go ahead with installation of the second electrical unit of 47,000 horsepower at its Ruskin hydro-electric plant, involving an expenditure of about $1,500,000. President W. G. Murrin says that power from the new unit should be ready to meet the 1938-39 winter peak.

Construction of the Grandview substation in Vancouver, in conjunction with the rearrangement of transmission facilities and the extension of the underground distribution system, involving ultimate expenditure of $1,000,000, is proceeding satisfactorily. More than $342,000 was spent by the company on these projects this year.

●

PARLEY ON U.S. -- CANADIAN POWER INTERESTS URGED

Canada and the U. S. should adopt a cooperative policy for the study and development of the hydro-electric power possibilities of the Columbia River on both sides of the international boundary. This was the gist of a paper presented at the recent joint regional meeting of the American Institute of Mining and Metallurgical Engineers and the western division of the Canadian Institute of Mining & Metallurgy by Dr. Carl E. Magnusson, director of the University of Washington engineering experimental station, Seattle.

"A series of comprehensive engineering studies under joint authorization of the two governments should be made," Dr. Magnusson said, "and reports prepared on the potential water-storage and power developments contingent on and in the vicinity of the boundary line."

To prove his statement Dr. Magnusson pointed to the controversy resulting from the application by the West Kootenay Power & Light Co. to the International Joint Commission for rights to use Kootenay Lake and River for storage. The application was refused on the ground that creating such a reservoir would retard the spring run-off and cause flooding of Idaho farm lands. "A joint engineering body should study the problem," Dr. Magnusson said, "and determine which would be of more importance to the proper expansion of the northwest, the land or the power development."

●

TWO HUNDRED AND THIRTY-THREE employees with 20 or more years of service were guests at the silver anniversary banquet held by the Utah Power & Light Co. in Salt Lake City last month. Speakers included Dr. Adam S. Bennion, assistant to the president; George M. Gadsby, president, and P. M. Parry, vice-president. Paul P. Ashworth was chairman of the banquet; J. W. Twelves, assistant treasurer, toastmaster.

●

Short Courses Planned for Maintenance Engineers

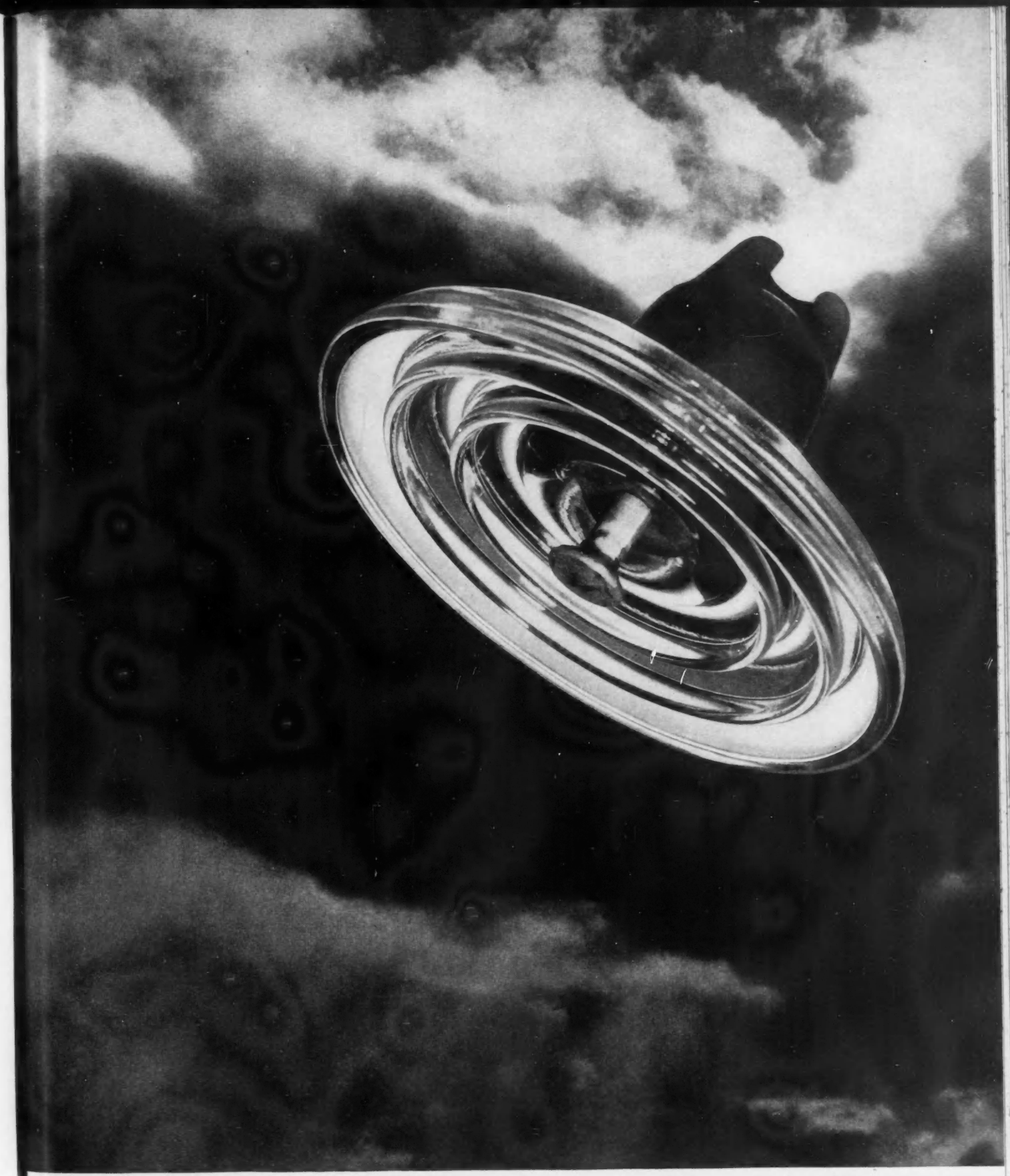
A group of 13 short unit courses for electrical maintenance engineers is being developed by the educational committee of the Electrical Maintenance Engineers Assn. of Southern California, under the direction of Walter Coburn, president of the association and E. E. Lombard, chairman of the educational committee. Subjects to be covered include: d.c. motors, single phase motors, 3-phase motors, d.c. controls, a.c. controls for squirrel cage, slip ring and synchronous motors, instruments, signal systems, relays, electronic tubes, lubrication, air conditioning, refrigeration, and trouble shooting.

A questionnaire distributed among members has indicated the number wishing to take each subject. Classes on each individual subject will be organized in small groups, for a two hour session. It is possible three or four classes will be arranged to run simultaneously if no overlapping of applicants interferes. Members of the association will be teachers of the classes.

Elmer J. Cipperly, heating specialist of General Electric Co., Los Angeles, was feature speaker at the Oct. 12 meeting of the E.M.E.A., giving a sweeping review of the growth of electric heating applications in industry and pointing to future possibilities. As though it was made to fit in with his talk a moving picture of the River Rouge plant of the Ford company was shown, arranged for by C. F. Kimball. It was filled with scenes showing electric welding, electric heating applications, and uses of electricity in modern mass production.

Another program on electronic tubes is scheduled for Nov. 8. The previous meeting, on Sept. 21, dealt with the fundamentals of electronic tubes; that on Nov. 8 will treat with applications of such tubes to industry. The December meeting, just before Christmas, will be "ladies night", with a social instead of an educational program.

Forty-two new members were admitted to membership at the last meeting, bringing the total to over 300. Fall plans include participating in a lighting forum which will be organized and run by the Western Institute of Light and Vision.



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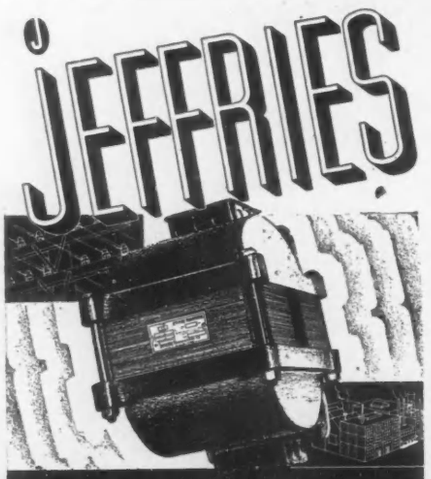
TODAY'S TREND TOWARD PYREX POWER INSULATORS

PYREX is a Trade Mark and indicates manufacture by Corning Glass Works, Corning, N. Y.



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1. Elimination of duplicate conduit runs.
2. Saving in power rate.

(Put all of your 110-volt equipment on a 220-volt or 440-volt power circuit, it is economical.)

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THERE ARE "BESTS" IN EVERY INDUSTRY

IN ELECTRICAL APPLIANCES IT'S

Sunbeam

★ Automatic MIXMASTER ★ Double-Automatic IRONMASTER ★ Silent AUTOMATIC TOASTER ★ COFFEEMASTER ★ WET-PROOF HEATING PAD ★ MASTER CORD and PLUG SET ★ GLASS COFFEE MAKERS FANHEATER ★ FLAT TOASTER ★ Automatic CLOTHES SPRAYER.

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47 YEARS MAKING QUALITY PRODUCTS

FPC Orders Investigation Of Security Exchanges

Acting with unexpected suddenness, the Federal Power Commission on Oct. 18 ordered "that an investigation be instituted forthwith for the purpose of determining the extent to which public utilities subject to the jurisdiction of the commission have been ordered or directed to carry out transfers of securities, and for the purpose of ascertaining the degree in which such proposed transfer or transfers of securities would affect the adequacy of service performed by said public utilities and impede or prevent proper examination of their accounts, books, records and properties and otherwise interfere with the performance by the commission of its duties under the Federal Power Act."

Reason for the order was not given. It was understood in Washington, however, that the action was inspired by the plan of certain utilities planning registration to transfer some of their holdings before the act of registration could prevent them from doing so. Identity of the companies was carefully guarded.

●

RECONNAISANCE REPORT on the water-power resources of the Imnaha River, Ore., has been made available in manuscript form by the Department of Interior. Prepared by Randolph O. Helland, engineer in the Geological Survey, the report, assuming regulation from storage at a site just above Skookum Creek, estimates the total potential capacity of the basin at 52,000 hp. for 90 per cent of the time, or 70,000 hp. for 50 per cent of the time. Interesting feature is a discussion of the possibility of diverting the river into the Snake River by a tunnel at a point near Coverdale Ranger Station.

●

UTILITY COMMISSIONERS in Pacific County, Wash., last month authorized their attorney, Jack J. Kluck of Seattle, to notify the West Coast Power Co. and the Willapa Electric Co. that unless the companies signify by Nov. 8 their willingness to sell their holdings within the district condemnation proceedings will be instituted without further delay. The suit, if instituted, will be on behalf of both Pacific and Wahkiakum Counties.

●

SEATTLE CITY LIGHT has reported a gain in revenues of $234,416.04 for the first eight months of 1937 over the corresponding period of 1936. Total revenues for the period were $3,745,612.28; operating expenses were $2,318,691.83.

TO PROVIDE ADDITIONAL electric service to the Fresno business district, San Joaquin Light & Power Corp. is erecting a new substation on G St. between Fresno and Mariposa. Cost of the project is approximately $116,200—$73,600 for the station itself, $42,600 for construction and relocation of 1,000-volt and 2,300-volt lines to and from the station. Equipped with the latest automatic equipment and having a capacity of 8,000 kw., the new unit will supplement the present O St. substation, which now handles the entire load of the downtown district, and the substation at Tuolumne and E Sts.

●

CHALLENGING THE CONSTITUTIONALITY of the law requiring installation of fish screens, the Pacific Gas & Electric Co. last month filed suit in the Sacramento County Superior Court against members of the California Fish & Game Commission and Herbert C. Davis, executive officer of the commission. The complaint asked an injunction preventing the commission from installing a fish screen at the outlet of Fuller Lake in Nevada County.

●

RECOMMENDATION that the City of Portland seek an option on the properties of the Portland General Electric Co. was made last month to the city council by Mayor Joseph K. Carson, Jr., following his signing of a 10-yr. option to purchase the properties of the Northwestern Electric Co. The move was based in large part upon a statement made by Bonneville Administrator J. D. Ross that it is uneconomic for public and private utilities to compete.

●

NEVADA-CALIFORNIA ELECTRIC CORP. has announced a new wholesale industrial power schedule for customers whose normal demand exceeds 1,000 hp. and normal consumption exceeds 500,000 kw.-hr. per month. Resultant rates are slightly lower than formerly.

●

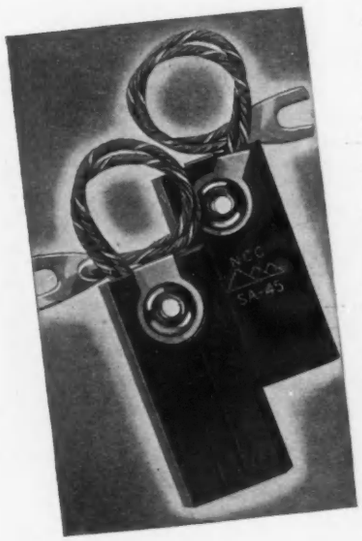
WASHINGTON WATER POWER Co.'s Almira substation was razed last month upon completion of the company's $60,000 fully automatic station. The old substation had served the district from Almira to Hartline since 1920.

●

TWO NEW PUBLICATIONS have been issued by the National Electrical Manufacturers Assn. — Industrial Control Standards, covering all material which was in the previous publication, all changes that have been made since then and a new section dealing with the types of resistors to be used in different applications; and Instructions for Care and Operation of Transformers, revised version of the 1931 pamphlet.

FOR HEAVY DUTY SERVICE SUCH AS THIS MILL DRIVE EQUIPMENT

Use "SA" Series Brushes



They possess the necessary stamina to withstand severe peak loads and emergency demands.

They have set new standards of uniformity in performance as well as in physical properties.

They improve commutation under difficult conditions.

They Reduce Operating And Maintenance Expense.

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EXECUTIVE

Because the clerical details of managing his personal estate were crowding his business hours, he has found it economical to turn this routine work over to our Agency Account service.

TRUST DEPARTMENT

CROCKER FIRST NATIONAL BANK
of San Francisco

THE SAFE ANCHOR FOR R. E. A. CONSTRUCTION!

For long life and economy in annual maintenance cost, Everstick Anchors are first choice in rural electrification construction. Their safety and dependability have been proven on millions of miles of electric lines.

ANCHORS FOR EVERY PURPOSE

The complete line of Everstick Anchors offers three expanding types in a complete range of sizes and holding capacities. Also rigid type Cone Anchors in all sizes. Made of malleable iron with its properties of strength, elasticity and rust resistance. Write for new bulletin "Everstick For Rural Electrification."

The Everstick Anchor Co. ☆ FAIRFIELD, IOWA

WASHINGTON---

IN A MOVE which came as a complete surprise, Frank R. McNinch, former Federal Power Commission chairman, took the oath of office Oct. 1 as chairman of the Federal Communications Commission. It had previously been announced that Mr. McNinch would be granted a leave of absence from the power commission; for legal reasons, however, a clear severance was deemed preferable. Nevertheless, President Roosevelt indicated that the shift would be for a temporary period only.

FEDERAL POWER COMMISSION last month issued, through its chief of Bureau of Finance and Accounts, Issue No. 2 of Interpretations of Uniform System of Accounts. The first issue was released in May.

BUREAU OF RECLAMATION indicated last month that it was hastening preparation of designs for the completion of Grand Coulee dam and would probably call for bids on materials and construction early in December. Also being prepared were designs for the Friant dam and canal system of the Central Valleys Project.

EMPHASIZING THE ABSENCE of any need for the creation of seven regional planning agencies, as proposed in the pending Norris-Mansfield bills, the United States Chamber of Commerce last month released a special committee report suggesting that, if lack of coordination is found among existing Federal and state agencies, remedies should be sought in reorganization legislation, not in superimposing a new layer of government upon a defective structure.

●

FINANCING—

FURTHER HEARING on application of the Sierra Pacific Power Co. to issue 35,000 shares of preferred stock and 226,000 shares of common stock in order to effect a consolidation with its parent company, the Sierra Pacific Electric Co., was held by the Federal Power Commission Oct. 28. The application, first filed July 3, had previously been dismissed.

PLANS WERE BEING COMPLETED last month for the sale of $23,000,000 of power revenue bonds for extensive improvements of the Los Angeles Bureau of Power & Light. Disposal of $10,000,000 in bonds was to have been made late last month and early this month. The remaining $13,000,000 will go sometime early next year. According to Chief Electrical Engineer E. F. Scattergood, the money will be used either for construction of a third transmission line from Boulder Dam or a local steam plant and system improvements.

IDAHO POWER CO. last month offered $18,000,000 in first mortgage 3¾ per cent bonds dated Oct. 1 and due in 1967. The funds will be used for the redemption, Jan. 1, 1938, of $13,000,000 first mortgage, 30-yr. 5 per cent bonds; for repayment of a $1,500,000 obligation to Power Securities Corp., and for reimbursing the utility's treasury.

●

R.E.A. ACTIVITIES—

THREE WASHINGTON rural electrification associations last month completed arrangements to buy power from private companies for distribution over lines to be built soon. The Cowlitz County Public Utility District will buy power from the Washington Gas & Electric Co., Longview; the Inland Empire Rural Electrification, Inc., from the Washington Water Power Co., Spokane, and the Benton County Rural Electrification Assn., from the Pacific Power & Light Co., Portland.

CONSTRUCTION OF THE LATAH COUNTY unit of the Clearwater Valley (Ida.) Light & Power Assn.'s $2,075,000 rural electrification project was started last month by the O. A. Carlson Electric Co. of Seattle.

CONTRACT FOR CONSTRUCTING the second unit of the Clearwater Valley Light & Power Assn.'s rural electrification project in Idaho has been awarded to Wayne-Burnaby, Inc., Spokane. The figure quoted was $325,912.

FILED IN WASHINGTON last month by the San Simon (Ariz.) Rural Electrification Administration Cooperative Assn. was an application for a Federal loan of $200,000 to build a 780-kva. power plant and distribution lines for electrification of the San Simon Valley.

ROBERTS & BROAD, Spokane, asking $34,725, submitted the low bid on construction of 40 mi. of rural power lines for the Benton Rural Electric Assn., Prosser, Wash.

SOUTH EDWALL LIGHT & POWER CO., Edwall, Wash., recently filed articles of incorporation naming Will Moos, J. H. Moos, Harold Merkel, Cecil H. Cole and A. C. Klein as incorporators. The company, a non-profit organization, plans to engage in telephone and power transmission business.

Ten million youngsters drink a toast in healthful milk — *to steel*

Milk travels a long route from the cow to your youngster's cup . . . . a route made possible -- *made safe* -- by steel.

In modern dairies, cows are milked by sanitary steel milking machines. Milk pails and cans are of steel for positive sterilizing. Steel trucks bring the milk to market. Steel pasteurizers insure its safety. Steel wagons deliver the milk to your street, and in a steel basket the milkman carries it to your door.

So begins your day, in which steel plays an all-important part. You shave with a steel razor. Your coffee "perks" in steel. You ride in a steel car, to work in a steel-framed building, at steel machines, typewriter or desk. Your dinner is cooked on a steel range, you read at a lamp wired through steel conduit, you go to sleep on steel springs. Youngstown makes these steels -- each steel developed by research to best serve its purpose. That is why you, the user of conduit, can *depend on Youngstown.*

QUALITY TRADE MARK YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

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YOUNGSTOWN

Sheets - Plates - Pipe and Tubular Products - Conduit - Tin Plate - Bars - Rods Wire - Nails - Unions - Tie Plates and Spikes

25-2A

THE NEW CHANCE
ROCK ANCHOR

- REQUIRES NO LEAD OR CONCRETE
- EASY TO INSTALL
- SAVES TIME AND MONEY
- POWERFUL IN PULL

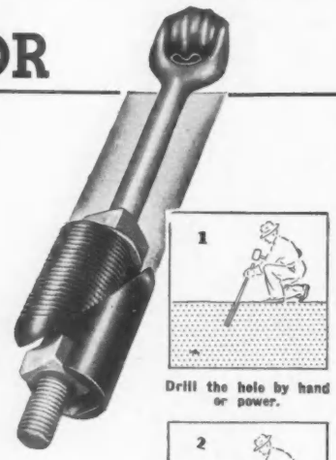
No more heating lead or mixing concrete in order to get a good anchoring job in rock. The new Chance rock anchor eliminates all this and the necessity for carrying grouting equipment.

This new anchor does the job easier, better and more economically than anything ever used for anchoring in solid rock. Its installation is simple (see illustrations 1, 2, and 3).

The expanding action wedges the anchor into the hole. The harder the pull, the tighter the wedge.

Ask the Chance man or your jobber's salesman for a demonstration or write for details.

DISTRIBUTED BY G. E. SUPPLY CORP.

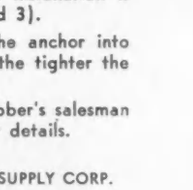


Drill the hole by hand or power.

Drop anchor into hole.

Expand anchor by turning rod. Large eye admits bar for wrench.

A·B·CHANCE CO. Utilities Division
CENTRALIA MISSOURI



HEMINGRAY Glass INSULATORS

for primary and secondary insulation service and rural line needs.

Brass-bushed for great strength, perfect threads and full protection against pin expansion.

Hemingray provides many advantages: greater mechanical strength . . . sustained dielectric strength . . . unaffected by sudden temperature changes . . . withstands maximum insulator pin expansion . . . never ages or deteriorates . . . all surfaces impervious to moisture . . . tougher—withstands rough handling . . . clear and flawless for easy inspection.

Available in all styles . . . clear or brown glass . . . ratings up to 15,000 volts. Write for samples.
Owens-Illinois Glass Company . . . Muncie, Indiana.

Wholesalers Discuss Wiring and Labor

Adequate wiring and labor, two subjects in the forefront of every industry discussion today, were the chief concern of the Pacific Division National Electrical Wholesalers Assn. at its annual fall meeting in Santa Barbara Oct. 14-16.

Burrell Manuel of Westinghouse Supply Co., Los Angeles, chairman of the division, opened the meeting on Friday morning by presenting Henry C. Rice, merchandise manager, Southern California Edison Co., as the first speaker on the adequate wiring discussion panel. Mr. Rice compared the 1911 house with that of 1937 and pointed out the $200 market which exists in rewiring every old house. He urged that each wholesaler salesman constitute himself a district leader and work with his group of contractors to promote the rewiring of American homes.

Presiding at the convention were Burrel Manuel, president (left), and Albert H. Elliot, secretary

Representing the industry as a whole, F. L. Hockensmith, manager of the Electrical Development League of Southern California, introduced Walter Stickel, field representative, who gave the wholesalers the same type of talk he has been giving to groups of industry members throughout Southern California.* Graham Holabaird of National Electric Products Co., and chairman of the adequate wiring committee of the Southern California League, gave the viewpoint of the manufacturer in the program. He stressed the fact that the program for the first time has a united industry front and enjoys a more constructive attitude on the part of the utilities.

Ross Hartley of the Electric Corp., Los Angeles, represented the wholesalers on the program. He presented a resolution commending the Southern California League for its initiation of the adequate wiring program and urg-

* Electrical West, October, 1937, p. 35-36.

ing other sections of the West to follow suit.

At the Saturday morning session, Thurston Ross, professor of business economics at the University of Southern California, gave a homespun talk on business conditions and the improved position of the wholesaler in today's distribution picture. Basing his observations on the change in retail buying to that of hand-to-mouth and carrying of less inventory, he said that this brings back upon the wholesaler his function of carrying the inventory and providing the delivery service for the retailer.

John Shannon of the General Electric Vapor Lamp Division outlined the sales possibilities for vapor lamps and equipment now to be handled through wholesalers.

The subject of labor and the relation of the wholesalers to the unions was the major interest of the closed session.

Next meeting of the division will be in Del Monte Feb. 3-5, 1938.

●

PACIFIC GAS & ELECTRIC CO., granted perpetual franchises to sell gas and electricity in San Jose, Calif., will henceforth turn over to the city between one-half and 1 per cent of its gross income from electricity sold in the city. Agreement to this effect was reached last month by the city council and the utility.

●

THE TIGRE MINING CO. Mexico City, Mexico, was last month authorized by the Federal Power Commission to transmit electric energy purchased from the Phelps-Dodge Corp., Douglas, Ariz., to its mining property located at El Tigre, Sonora, Mexico. The energy, approximately 1,500,000 kw.-hr. annually, will be transmitted over the mining company's 44,000-volt line.

●

PURCHASE OF THE PICKERING LUMBER CO. by J. B. Shaw, Modoc County (Calif.) lumber operator, was delayed last month because of the lack of necessary power. Under consideration was a request that the Pacific Gas & Electric Co. run a high tension line from Bieber to Alturas in order to remedy the situation.

●

COMPLETION of the 5,000-hp. hydro-electric power plant by the Pend Oreille Mining & Milling Co., Metalline Falls, Wash., is scheduled soon after a second unit of 2,500 hp. is installed. The first unit of 2,500 hp. has already been cut into service.

●

DAVENPORT, WASH., city council has awarded a contract for installation of a street lighting system to A. C. Rice of Spokane on his bid of $5,150.

About People

Contractor's Council Elects J. E. Chandler

J. E. Chandler of Chandler Electric Co., Los Angeles, has been elected president of the Electrical Contractors Council, Inc., an organization composed of 36 of the larger operators in southern California.

Other officers of the council, which entered its second year recently, are: G. E. Arbogast of the Newbery Electric Corp., Los Angeles, vice-president; C. T. Smallcomb of Smallcomb Electric Co., Los Angeles, treasurer, and R. R. Jones of Jones Electric Co., South Pasadena; Victor B. Sayre of Commercial Electric Co., Los Angeles; George DeAth of Peerless Electric Co., Los Angeles, and George L. Patterson, Los Angeles, directors.

Operating under a voluntary agreement of fair competition such as suggested by the N.E.C.A., the council has been responsible for the development of an orderly method of adjusting prices to meet market and labor conditions.

●

Woolwine-Norris Names Kingsley Sales Manager

Appointment of Kenneth C. Kingsley as general sales manager of the Woolwine-Norris Corp., manufacturers of electric ranges and water heaters, was announced last month by K. T. Norris, president of the company. As an executive of the Los Angeles Soap Co. for many years, Mr. Kingsley was outstanding in the sales promotion and merchandising fields.

"The Go Sales Campaign", a sales and advertising drive outlining in detail the market for electric ranges and practical means of developing it, is the first merchandising effort to be undertaken by Mr. Kingsley. Incorporated in the program is a complete dealer sales campaign backed by newspaper, radio, magazine and trade journal advertising.

●

W. E. FLEETWOOD, former division manager at Provo, Utah, has been named superintendent of dealer coordination for the Utah Power & Light Co. His immediate concern will be to promote the Better Light-Better Sight campaign which started throughout the territory Sept. 25.

CLARENCE L. THOMPSON, Los Angeles district manager of the Westinghouse Lamp Co., died suddenly Oct. 13 while playing golf at Santa Barbara prior to the fall meeting of the Pacific Division of N.E.W.A. Mr. Thompson had served in the electrical industry for more than 30 years, having originally entered the San Francisco Westinghouse office in the accounting department. He later joined the Westinghouse Lamp sales force, first as a salesman in the San Joaquin Valley and later as manager of the Los Angeles district.

●

H. H. Benfield Named to Cleveland Post

Herbert H. Benfield has been appointed manager of conduit sales for Steel and Tubes, Inc., Cleveland, following seven years in San Francisco as district sales manager.

BENFIELD GROVE

Arthur D. Grove, with the Chicago office of the company for the past twelve years, has become district representative in northern California and Nevada. His headquarters will be at 718 Rialto Bldg., San Francisco.

●

SIGNALLING THE ENTRANCE of the Frigidaire division of General Motors Corp. into the home appliance field, E. G. Biechler, general manager of the division, last month announced the appointment of F. H. McCormick as chief engineer of the electric range engineering department. Mr. McCormick was formerly an employee of the Washington Water Power Co., in which capacity he sold and serviced some of the first electric ranges built in 1911.

●

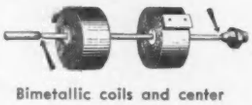
JOHN DIERDORFF has been made advertising supervisor for the Northwestern Electric Co. Webster A. Jones will assist in the department.

●

GENE GARCIA of the General Electric Supply Corp., Oakland, Calif. has been elected president of the Oakland Electric Club, succeeding L. J. Traver. The club holds regular Monday noon luncheons at the Oakland Women's City Club.

LINCOLN DEMAND METERS

NO PARTS THAT WEAR



Bimetallic coils and center shaft of actuating element

In the above illustration the arrows indicate the only points of possible wear in the actuating element. Even here the motion is little. There is no appreciable wear in years of service.

TYPE WD

SEND FOR YOUR COPY OF CATALOG TO

LINCOLN METER COMPANY
SPRINGFIELD, ILLINOIS

Built to "Take It"

McGILL
Lamp Guards

No. 1420

No. 1425

No. 1400

The cheapest guards in the long run are those that stand up under the most banging around. McGILL Lamp Guards are that kind.

"Loxon" Guards lock on with key, preventing theft of lamps. "Gripon" Guards are held on by screws. Made to fit all sockets, for regular and mill type lamps, with or without reflectors. Order from your wholesaler.

(Listed as Standard by Underwriters' Laboratories)

No. 1600

No. 1610

No. 1429

McGILL MANUFACTURING CO.
Electrical Specialties of Quality
VALPARAISO, IND.

Box No. 604

E. I. Hannah Named L. A. District Manager

E. I. Hannah last month became Los Angeles district manager for Maydwell & Hartzell, manufacturers' representatives. He had previously been sales engineer operating out of the company's Los Angeles office.

At the Santa Monica P.C.E.A. conclave. Left, H. F. Hartzell, president of Maydwell & Hartzell; at right, E. I. Hannah, Los Angeles manager

Other organization changes included the appointment of Charles D. Brenner as assistant manager; Evelyn McCann, office manager, and Clyde Corp, warehouse foreman.

●

WILLIAM EDLUND of Electrical Distributing, Inc., Portland, was last month announced as a second-prize winner in the nation-wide contest conducted for Leonard refrigerator wholesale salesmen by the Leonard division of Nash-Kelvinator Corp.

●

FREDERICK D. BENZ, former Chicago manager of wire sales for United States Rubber Products, Inc., has been appointed district manager of wire sales in the Pacific division of the company. Mr. Benz will be located in San Francisco.

●

CLEON D. BROWN, metropolitan sales manager for the Geo. A. Belsey Co., Ltd., Los Angeles, has been made general sales manager of the entire southern California region with the exception of San Diego.

●

F. W. TOPPING, Seattle representative for Kelvinator, was one of the company's national direct sales force to attend the recent International Ice Cream Manufacturer's Assn. convention at Dallas and the Dairy & Machinery Exhibit at New Orleans.

●

GLEN W. BAKER has been appointed General Electric appliance dealer at American Fork, Utah.

HENRY J. WHEELER, formerly at Bridgeport and Schenectady for the General Electric Co., has been appointed wire and cable specialist for the company at Los Angeles.

●

A. H. REINACH was last month placed in charge of the new commercial sales office opened in San Francisco by the Kelvinator Division of the Nash-Kelvinator Corp. Mr. Reinach, formerly sales manager of the company's standard commercial and liquid cooling department, will superintend activities in

A. H. REINACH

the eleven Western states. Hitherto, all Kelvinator commercial activities in this area were directed through the regional office of J. L. Conover.

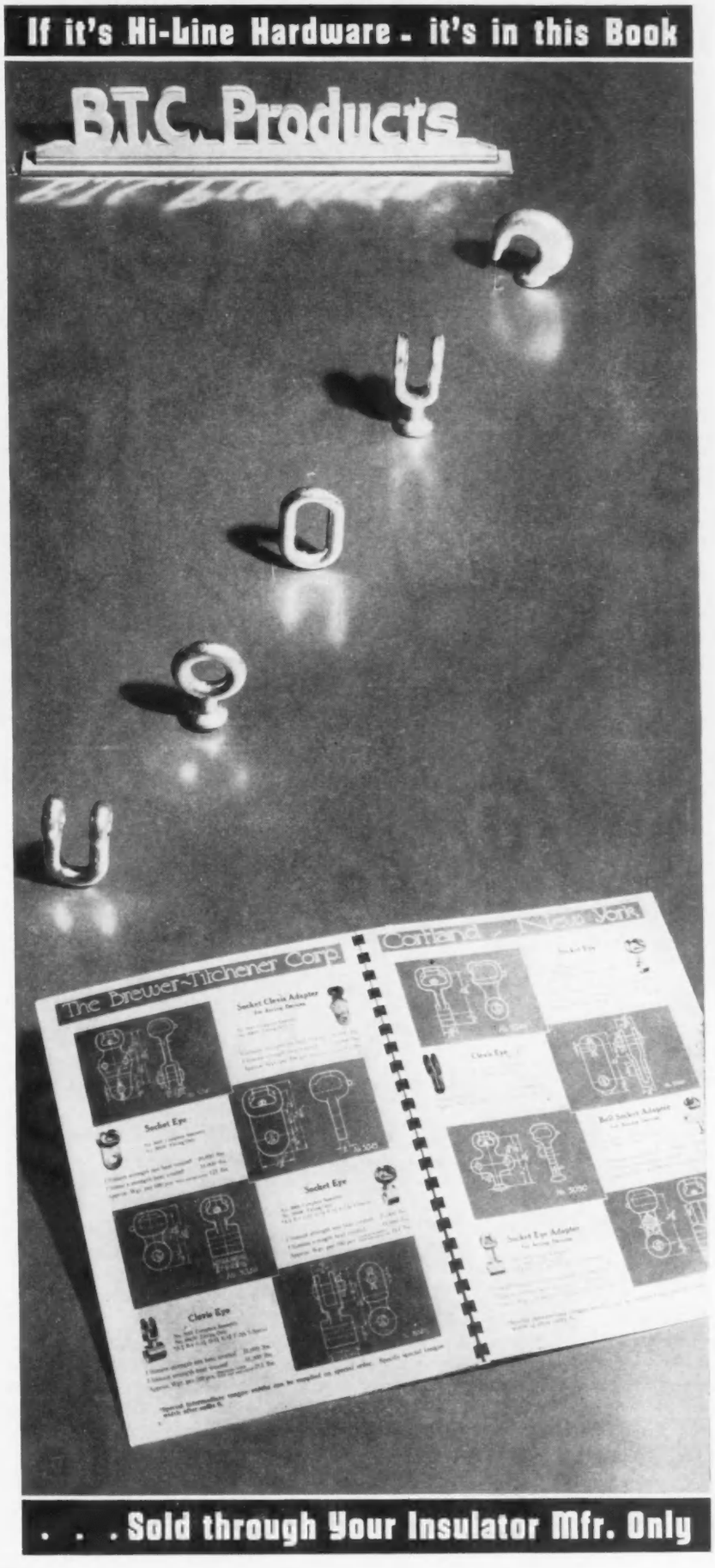
In another appointment, Harry C. Mealey, recently general sales manager of refrigeration for the Edison General Electric Appliance Co., was named Kelvinator's western regional manager of household appliances. He succeeds Mr. Conover, who has been transferred to Chicago as manager of a new branch office.

●

J. S. ALLAN, Nevada-California Electric Corp. safety supervisor for the past eight years, has been named the first man to fill the recently created position of company personnel director.

●

CHARLES E. SWARTZBAUGH, president of the Swartzbaugh Mfg. Co., Toledo, Ohio, was last month presented the Manufacturer's Medal and Purse for 1937, given under the James H. McGraw Award, in recognition of his contribution to the advancement of the manufacturing branch of the electrical industry. As chairman of the National Electrical Manufacturers Assn.'s Business Development Committee, Mr. Swartzbaugh organized and coordinated the various joint promotional activities of electrical manufacturers throughout the country.


If it's Hi-Line Hardware - it's in this Book
B.T.C. Products
The Brewer-Titchener Corp.
Socket Eye
Clevis Eye
. . . Sold through Your Insulator Mfr. Only

Crapo
GALVANIZED PRODUCTS

Seven Wire Steel Strand

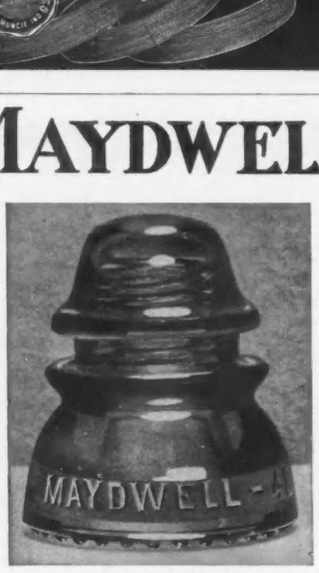
Telephone and Telegraph Wire

Crapo Galvanized Steel Strand is quickly, easily and economically served. Its *pure zinc* coating is so adherent and so ductile that it withstands vigorous bending and twisting without cracking or peeling. This insures corrosion-resisting joints, longer years of service, lower maintenance costs.

Crapo Galvanized Seven Wire Steel Strand and Telephone and Telegraph Wire are available in all standard grades and sizes.

Indiana Steel & Wire Co.
Muncie, Indiana

MAYDWELL



Glass Insulators

All Standard Numbers For All Purposes

Made of high quality materials in a modern Pacific Coast plant producing an unusually tough glass to withstand all severe service conditions.

MAYDWELL & HARTZELL
INCORPORATED
Electrical Engineers and Manufacturers' Representatives
Los Angeles ★ San Francisco

A. D. Leach Chosen Heating Chairman

A. D. Leach of the Northwestern Electric Co. has been elected chairman of the Pacific section of the National District Heating Assn. Other officers are F. Correll, Spokane Central Heating Co., vice-chairman; John Merryman, Pacific Power & Light Co., secretary-treasurer, and A. L. Pollard, Puget Sound Power & Light Co.

Meeting for its sixth annual conference in Tacoma, Wash., the association chose Portland as the 1938 convention city.

●

ANGUS G. SCOTT, formerly superintendent of Power Distribution for Cleveland Railways, has been appointed manager of line material activities for the Westinghouse Electric and Manufacturing Co. Mr. Scott will be located at East Pittsburgh.

●

C. L. WOOLSEY has been placed in charge of the western office of Mathias Klein & Sons. He succeeds H. B. Wilson, Jr., who has been transferred to the Chicago office. Mr. Woolsey's address is 1509 Camden Ave., West Los Angeles, Calif.

●

EDWIN B. CUMMINGS, for the past four years Alhambra district manager for the Southern California Edison Company, has been appointed manager of the Santa Barbara division. He succeeds C. M. Campbell, who is taking his place at Alhambra.

●

A. E. TRACY, City Electrician, Redlands, Calif., was recently given added responsibility over the street lighting in the business district. The lighting was removed from the street department and turned over to the department of the city electrician. The Board also empowered Mr. Tracy to change the street lighting in the business district to more modern type of fixtures.

●

RALPH J. CORDINER, former Pacific Coast representative of the Edison Electric Appliance Co. and present assistant manager of the appliance and merchandise department of the General Electric Co., has assumed the additional duties of general manager of appliance sales. He succeeds P. B. Zimmerman, newly appointed executive of the Norge division of Borg-Warner Co.

●

ROBERT ENGLAND, director of extension at the University of British Columbia, has been appointed economic adviser of the Winnipeg Electric Co.

F. J. WOLDRICH, member of the Cutler-Hammer sales staff since 1933, has been put in charge of the company's new branch sales office at 625 N.W. Everett St., Portland. The office will operate under the supervision of the Seattle office.

●

L. T. OWEN has been appointed sales engineer for Hubbard & Co., Oakland, according to an announcement by Division Sales Manager Harold Q. Noack. Mr. Owen will make his headquarters in Oakland and will cover northern and central California and northern Nevada.

●

GROVER GRIDER of Stockton has been elected president of the newly formed Electrical Contractors and Dealers Assn. of San Joaquin County. Other officers include R. Goold, secretary, and Frank E. Rea, business manager. Official bid depository, where duplicates of all bids must be filed, has been established by the association in the Bank of America Bldg.

●

ROGER B. MCWHORTER, chief of the Federal Power Commission's Bureau of Engineering, was last month named the commission's representative on the Bonneville advisory board.

Classified Section

- **COST of undisplayed classified ads is 5 cents a word, minimum $1.00 insertion. Box numbers in care of our San Francisco office count as 10 words additional in undisplayed ads.**
- **RATES per column inch of displayed ads is $3.75.**
- **All classified ads are payable in advance.**

ELETCRICAL WEST 883 Mission Street San Francisco, Calif.

WANTED—Men with experience in the operation and maintenance of large hydro-electric plants, and men with proven supervisory ability to fill position of superintendent. In reply state full detailed experience, training, age, address, and references. Salary range operators, $2,000-$2,500; superintendent, $3,000-$3,600. Address Box 130, Electrical West, 883 Mission St., San Francisco, Calif.

PROFESSIONAL SERVICES

ELECTRICAL TESTING LABORATORIES

Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.

80th St. and East End Ave., New York

Operator—Administrator

When J. D. Ross, right, newly appointed Bonneville administrator, passed through Portland early last month on his way to a Washington conference with Secretary of Interior Harold Ickes, he paused briefly to talk with Col. T. M. Robins, who, as head of the North Pacific Division, Army Engineers, at Portland, will operate Bonneville. Mr. Ross was scheduled to open his Portland office later in the month

●

EDWARD W. CONROY, superintendent of light and power for the Puget Sound Power & Light Co. in the Peninsula area, with headquarters in Bremerton, has been transferred to the Central District offices in Seattle and given the title of Assistant to the General Superintendent of Light and Power. Lyman Chitty, an employe of the company since 1916, who has been employed in the Southern, Eastern and Western divisions of the company, will succeed Conroy who first joined forces with the company in 1922. Both men are graduates of the University of Washington's school of electrical engineering.

●

MRS. STELLA FLOYD, home economics representative for Edison General Electric Appliance Co. in the Salt Lake district, has been put in charge of experimental and promotional work on Hotpoint home laundry equipment. She will work out of Chicago in all districts.

●

HARRY BUFFUM, president and general manager of Buffum's Department Store, Long Beach, Calif., has been elected to the board of directors of Southern California Edison Co. Ltd. The election conforms with a company policy to have an outstanding merchant as a member of the directorate.

●

R. W. BROWN, salesman for Allied Industries, Inc., last month took over duties as manager of the Los Angeles branch of the company.

PAUL DAVIS, for many years in the illuminating engineering division of Holophane Co., New York, has been named sales and engineering design representative of Holophane in Washington and Oregon. According to Robert Dummel, Pacific Coast representative, San Francisco, Mr. Davis will have offices at the General Electric Supply Co. in both Seattle and Portland.

●

A. T. BERGERON, Pacific Coast sales manager for the Miller Co., has announced the appointment of John P. Wade as representative in northern California, Nevada and Utah. Mr. Wade was formerly connected with the Utah Power & Light Co. lighting bureau and more recently has been a lighting salesman in the Santa Rosa territory for Pacific Gas & Electric Co.

PRESENT HEADQUARTERS of F. H. Harrigan, field representative of the National Kitchen Modernizing Bureau and Edison Electric Institute, are at the Portland General Electric Co. Mr. Harrigan reports that 26 new bureaus have been established in his territory, consisting of eight western states, since April. Fifteen other bureaus are now in process of formation.

●

PAUL A. JONES, resident engineer on the Gila project, has been placed in charge of construction on the new Buffalo Rapids project in Montana.

●

CAMERON G. WILL, for the past four years PWA engineer examiner located in Olympia, Wash., has resigned his position to become engineer in charge of construction for the City of Seattle at Ruby Dam.

A MIDWESTERN utility investigated the various ways for bringing electric power for the first time to a small village.

The choice of the most satisfactory system rested between:

1. A 13,800-volt line.
2. A 6900-volt line, equipped with two branch-feeder induction regulators, installed on the low-voltage side of two transformers rated 6900/2400 volts.

When the distribution engineers discovered that the 6900-volt line with two regulators not only cost $2000 less to install, but also offered 5% better voltage regulation, naturally they purchased regulators.

General Electric's complete line of voltage-regulating equipment is fully discussed in a portfolio entitled "The 8-point Plan for Profitable Voltage Regulation." A copy will be sent you at your request. General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

Filing No. 5400 350-136D

Underground Transmission

Without Conduit

Note the air and moisture proof flexible coverings. Sealtite represents a distinct advance in parkway cable construction. It is more pliable than any other underground cable . . . and costs are considerably lower.

Write for booklet offering suggested uses and explaining long life.

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Parkway and Airport Cable with Maximum Flexibility by

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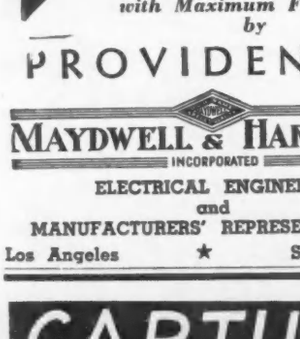
MAYDWELL & HARTZELL
INCORPORATED
ELECTRICAL ENGINEERS
and
MANUFACTURERS' REPRESENTATIVES
Los Angeles ★ San Francisco

CAPTURE Show Window Lighting Business with



Sterling LITE-FLO Reflectors

More light means more sales—every merchant knows that. No wonder contractors find Sterling Lite-Flo Reflectors such a powerful ally in closing lighting contracts.

In thousands of show windows these remarkable reflectors have multiplied lighting effectiveness using the same lamps—the same current—the same operating cost. Catalog on request.

H. B. SQUIRES CO., Representative
Los Angeles—San Francisco—Seattle

REFLECTOR & ILLUMINATING CO.
1431 W. Hubbard St. CHICAGO

About the Trade

DIRECTOR'S FURNITURE CO., Portland, has installed a complete electric kitchen in one of its display windows.

●

HEDGES HARDWARE CO. has bought the Weise Mercantile Co., 9121 S.E. Foster Rd., Portland.

●

U. S. PATENT OFFICE last month granted manufacturing rights for a 17-yr. period to A. O. Samuels, president of Samson-United Corp., Rochester, N. Y., on his 1936 introduction of rubber and flexible bladed fans.

●

EMPHASIZING THE DIFFERENCES between modern and old electric fittings, Killark Electric Mfg. Co. last month inaugurated a new direct mail campaign to its distributors.

●

ORGANIZATION of Condon & Young, Inc., Black Bldg., Los Angeles, as a manufacturers' agency covering southern California and Arizona was announced last month by E. S. Condon and Robert A. Young. The new firm is now representing Lapp Insulator Co., Inc., LeRoy, N. Y.

●

REGULATOR EQUIPMENT has been added to the products offered by the Ideal Commutator Dresser Co., Sycamore, Ill., which, as a first step, has purchased patents of Marshall Electric Co., which operated the plant devoted exclusively to the manufacture of regulators for voltage, current and speed control.

●

C. F. CATE, 234 N. Davis St., El Paso, Tex., has been appointed agent in southwestern Texas and southern New Mexico for the Roller-Smith Co., New York City.

●

GLOBE ELECTRIC CO., 307 S. First Ave., Seattle, headed by George Reiniger and Dan U. Chamberlain, has been named distributor of the Fairbanks-Morse refrigeration, radio and home laundry lines in the Puget Sound area.

●

GOLD HOME APPLIANCE CO. is a new appliance store opened by the Gold Furniture Co. of Los Angeles at 3749½ San Fernando Rd., Glendale, Calif. Harold Umscheid is in charge.

●

MISS MAE JENKINS, Nela Park home economist, has been giving instructions in complete electric kitchens at Breuner's, Sacramento, Calif., and Howell Electric, Inc., Reno, Nev.

ARIZONA WHOLESALE ELECTRIC CO. has opened a branch at 40 E. Toole Ave., Tucson, Ariz. Jack Avery is in charge.

●

H. H. VAN LUVEN CO., 307 E. Third St., Los Angeles, has been named representative for the Hart Mfg. Co. in Los Angeles. F. I. DuFrane continues as San Francisco representative.

●

SALT LAKE ELECTRIC SUPPLY CO., of which George Randall is proprietor has been busy with an installation at the new Montgomery-Ward Building in Salt Lake City. High intensity lighting and air conditioning in a virtually windowless building makes this an unusually electrically equipped store.

●

AMERICAN REFRIGERATION CO., 153 Seventh St., San Francisco, is a new wholesale refrigeration repair shop opened last month by Rowland F. Cooke and James Merriman, former employees of the California Refrigerator Co.

●

STERLING FURNITURE CO. has opened a new store with a full line of electrical appliances at Sugarhouse, Utah. D. L. Peterson is manager.

●

A NEW $186,000 PLANT is being erected by General Controls Co., Los Angeles, for the manufacture of automatic temperature, pressure and flow controls for refrigeration, air conditioning, etc.

●

MOVED

UTAH STOKER & AIR CONDITIONING CO. to larger quarters at 267 S.W. Temple St., Salt Lake City.

●

SHIELDS-MITCHELL ELECTRIC CO., formerly located at 211 S. Brand St., Glendale, Calif., to 304 N. Brand.

●

CHANEY APPLIANCE CO. from 6021 S. San Pedro St., Los Angeles, to 2714 W. Florence St.

●

GRAYBAR ELECTRIC CO., Salt Lake City, to new and larger building at 245 S. 1st West St.

●

SUNSHINE ELECTRIC CO., Portland, to 6908 N. E. Sandy.

●

G. R. PIZARRO, Norge refrigerator representative, to the Signal Oil Bldg., Los Angeles.

●

MILLS GAS & ELECTRIC APPLIANCE CO., formerly located at 4813 Whittier Blvd., East Los Angeles, to newly constructed store at 4960 Whittier Blvd.

●

ROYSTER'S RADIO SHOP, dealers in electrical appliances and radios, to new quarters at 443 West Garvey Ave., Monterey Park, Calif. The shop was formerly located at 107 East Garvey Ave.

Trade Literature

Free to you . . . Any of these instructive bulletins . . . Address a post card to ELECTRICAL WEST 883 Mission St., San Francisco, Calif. . . . drop it in the next mail.

1101:
INDOOR CUBICLE TYPE SWITCHGEAR affording isolation of high from low potential circuits; description, application, construction and dimensions. Allis-Chalmers Mfg. Co.

1102:
OPEN LINK FUSE CUTOUTS for light load transformer installations described and illustrated. Schweitzer & Conrad, Inc.

1103:
AUTOMATIC LINE SPLICERS illustrated and described. Burndy Engineering Co., Inc.

1104:
MODIFIED SCHERING BRIDGES for measuring specific inductive capacity and power factor of dielectrices; insulation resistance test set for research, teaching and testing, illustrated and specified in separate catalogues. Leeds & Northrup Co.

1105:
HORIZONTAL DRILLERS for use in boring conduit tunnels described and illustrated. Hydrauger Corp., Ltd.

1106:
OIL FUSE CUTOUTS, all types, described, detailed and specified. General Electric Co.

1107:
ADJUSTABLE MAGNET CONTROLLER, automatic-discharge type, illustrated and specified. Electric Controller & Mfg. Co.

1108:
CENTRIFUGAL REFRIGERATION for small and large tonnages; 48-page semi-technical manual giving descriptions, applications and specifications. Carrier Corp.

1109:
VIBRATION DAMPING products for machines described and pictured in 16-page catalogue. Korfund Co., Inc.

1110:
PORCELAIN ENAMELED LIGHTING FIXTURES for all industrial purposes fully described in 200-page catalogue. Goodrich Electric Co.

1111:
INDIRECT LIGHTING EQUIPMENT for use in offices, stores, schools, restaurants, etc. illustrated and described in elaborate 48-page catalogue. Curtis Lighting, Inc.

1112:
MANUFACTURE OF STEEL for all purposes told pictorially in 115-page book. Youngstown Sheet & Tube Co.

1113:
PHOTOELECTRIC POTENTIOMETER giving high speed, sensitivity and stable calibration described in detail. Weston Electrical Instrument Corp.

1114:
LIGHTING UNITS of all varieties catalogued. F. W. Wakefield Brass Co.

1115:
SUSPENSION INSULATORS, paper describing test of dynamic characteristics of cap-in insulators, explaining factors influencing insulator life, showing correlation of insulator design with field performance. Ohio Brass Co.

1116:
CONDENSING REACTION TYPE TURBO-GENERATOR units of 1,500 kw. to 5,000 kw. capacity; 28-page bulletin giving construction details, photographs, drawings. Allis-Chalmers Mfg. Co.

1117:
MERCURY SWITCHES; description of complete line, applications, suggestions for efficient use. General Electric Vapor Lamp Co.

1118:
INSULATING VARNISHES and compounds described and catalogued. John C. Dolph Co.

1119:
LIGHTING UNITS for extreme service conditions in industrial plants. Westinghouse.

1120:
RECORDING MILLIVOLTMETER for electrolysis surveys described, illustrated and catalogued. Bristol Co.

1121:
HIGH-VOLTAGE PIN-TYPE INSULATORS; short treatise. Westinghouse.

New Books

RADIO ENGINEERING, by Frederick Emmons Terman, 2d edition; 6x9 in.; 400 pages; published by the McGraw-Hill Book Co., Inc.; available at the McGraw-Hill book room, 883 Mission St., San Francisco; price $5.50. Revised to include recent advances in the field, the second edition covers the fundamentals of all electron tubes in one chapter, expands the sections on power amplifiers to a chapter unique in its completeness. Material presented for the first time includes accurate analysis of condenser-input filter systems, universal amplification curves of resistance- and transformer-coupled amplifiers, directional characteristics of radiation from a nonresonant wire in space, and high-efficiency grid- and suppressor-grid-modulated amplifiers.

STATISTICAL YEAR-BOOK of the World Power Conference, edited by Frederick Brown, published by The Central Office, World Power Conference, available through the American National Committee, Interior Building, Washing, D. C., price $5. According to the publishers, the book is an endeavor to publish international statistics on power resources, development, and utilization on a comparable basis. It relates to 1933 and 1934, deals with sixty countries, including continental and world totals where practicable.

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• CLIFTON MANUFACTURING CO.
CROMPTON TONG TEST AMMETER
• COLUMBIA ELECTRIC MFG. CO.
PYREX INSULATORS
• CORNING GLASS WORKS
• BREWER-TITCHENER HARWARE
TRANSFORMERS
• GARDNER ELECTRIC MFG. CO.
Power and Distribution Transformers
• LEE SKIPWITH & CO., INC.
Niagara Air-Insulator Current Transformers
CABLE GRIPS
• KELLEMS PRODUCTS, INC.
CONNECTORS, GROUND ROD CLAMPS, UTILITY HOISTS
• JASPER BLACKBURN PRODUCTS CORP.
METERING INSTRUMENTS
• LANDIS & GYR., INC.
NEON MULTIPLE PLUG FUSE
• PACIFIC INDICATOR CO.
FUSES, CUTOUTS, PROTECTIVE DEVICES
• SCHWEITZER & CONRAD, INC.
UNDERGROUND TOOLS AND EQUIPMENT
• T. J. COPE, INCORPORATED
CAPACITORS
• CORNELL-DUBILIER CORP.
World's Largest Exclusive Mfrs. of Capacitors

"Yours for Quick Service, Reliable Products, Local Stocks"

New Products

Rotating Barbecue Unit

Announced by Brannon, Inc., for attachment to its roasters is a broiler which includes motor-driven skewers for rotating the meat. Meat is adjusted on the skewers, spit attached to the motor shaft and the unit plugged into the wall outlet. Double-sided heating units roast the meat as it rotates at 5 r.p.m. Roasts weighing up to 10 lb. are barbecued rare in 10 to 15 min. to the pound. Unit comes complete with spit, motor and heating units for 110-volt, 50-60-cycle a.c. or a.c.-d.c. operation.

●

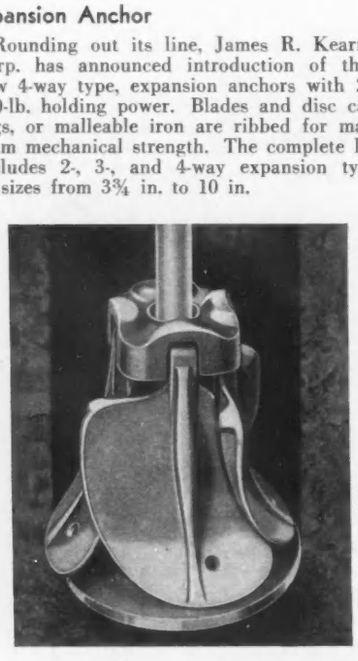
Porcelain-Housed Fuse Cutout

Porcelain-housed fuse cutout with reclosing features has been announced by the General Electric Co. Two fuse holders are contained in the reclosing door. Should the first fuse link blow, the door is pushed outward at bottom. After a time delay of one second the other fuse holder with its link is connected and service is restored. Should the second fuse blow, the complete door drops open and is isolated from the circuit. Door is constructed so that it is interchangeable with that of present G.E. 50-amp. indicating and drop-out cutouts.

●

Expansion Anchor

Rounding out its line, James R. Kearney Corp. has announced introduction of three new 4-way type, expansion anchors with 21,000-lb. holding power. Blades and disc castings, or malleable iron are ribbed for maximum mechanical strength. The complete line includes 2-, 3-, and 4-way expansion types in sizes from 3¾ in. to 10 in.



Single Phase Watthour Meter

Claimed to have a practically flat accuracy characteristic from 0.5 to 60 amp. is the type I-30, single-phase watthour meter announced by General Electric. It is rated 15 amp. Conforming to the standardization program, it is designed primarily for residential loads. Its features include a new driving element with compensating shunt for high and low current values and a light-load and lag adjustment compensated for temperature variations when loads of less than unity power factor are being registered.

●

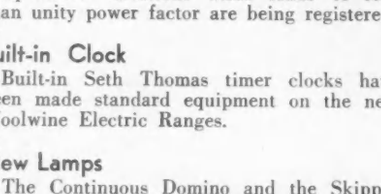
Built-in Clock

Built-in Seth Thomas timer clocks have been made standard equipment on the new Woolwine Electric Ranges.

●

New Lamps

The Continuous Domino and the Skipper are two new lamps introduced by the F. W. Wakefield Brass Co. The former, a semi-cylindrical lamp with opal glass, chromium end caps and two double sockets so placed that when from 15 to 100 watts are used there is no apparent spottiness on the surface of the unit, can be attached either to wall or ceiling for the display of merchandise. The latter is a simple standing or clamp-on dask lamp finished either in brass or chrome.



●

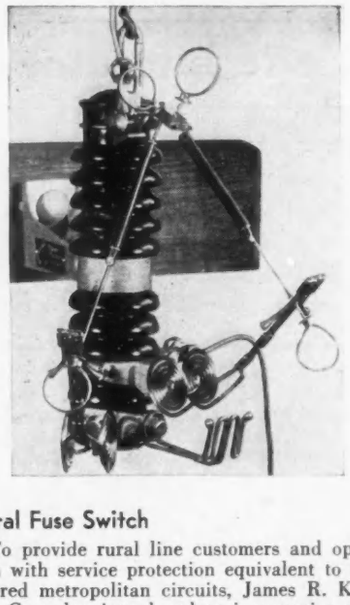
Air Conditioner Carrier

Mobilcart is a transporting device designed by Westinghouse to facilitate loading, unloading and transporting the Mobilaire, portable unit air conditioner, from room to room. The machine, equipped with two hook lifting cranes and rubber tire, roller bearing wheels, unloads the air conditioner from the crate, delivers it to the desired rooms, raises it to the height of the window sill and swings it into place.

●

Revolving-Brush Hand Cleaner

Royal "Baby Grand," a revolving brush hand cleaner, has been introduced by the P. A. Geier Co. for use in cleaning everything above the floor. Light and well balanced, the new model is equipped with a metal-covered revolving brush mounted in self-lubricated silent bearings and is adjustable in three positions. Other features include: thumb control on handle, rubber bumper on nozzle, 2/10 minus hp. universal type motor, and 15-ft. cord.



Rural Fuse Switch

To provide rural line customers and operators with service protection equivalent to that offered metropolitan circuits, James R. Kearney Corp. has introduced an inexpensive automatic reclosing type fuse switch. Called Trip-O-Link Trip-Saver, rated 5,000 and 7,500/12,500 volts wye, 25 amp., the switch is a light weight, "two shot" repeater. Optional pole or crossarm and transformer mounting is available.

●

Protectofuses

Designed to offer continuous over-voltage protection through fuse links for up to three surges, and a gap by-pass to ground thereafter, is the Protectofuse announced by W. N. Matthews Corp. It incorporates five gaps, three 15-amp. fuse links, and is designed for 7,500-amp. interrupting capacity. First surge is through gap No. 1, then through gap No. 2 and its associated fuse link. Gap No. 3, in series with the second fuse, is slightly larger than gap No. 2. And so on. Ratings range from 6,900 volts delta up to 46 kv. wye.

●

Totally Immersed Linestarters

For starting squirrel cage motors in applications where either corrosive or explosive gases may be present, Westinghouse has introduced a line of totally oil-immersed linestarters known as low-voltage type DNO. Corrosion-resisting motor control, motor disconnect switch and circuit protective device are provided in one oil tank. Described as weather-, drip-, and splash-proof, with sheet steel tank and gasketed cast iron top, the linestarters conform to Underwriters' specs for Class I Group D hazardous locations.

WHERE TO BUY IT IN THE WEST

Air Conditioning
Frigidaire Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Kelvinator Corp.
Norge Division, Borg-Warner Corp.

Ammeters and Voltmeters
Ferranti Elec., Inc.
General Elec. Co.
Roller-Smith Co.
Westinghouse Elec. & Mfg. Co.
Weston Elec. Instr. Corp.

Anchors, Guy
A. B. Chance Co.
Everstick Anchor Co.
Hubbard & Co.
James R. Kearney Corp.
W. N. Matthews Corp.

Anchor and Guy Rods
A. B. Chance Co.
General Elec. Co.
Hubbard & Co.
Maydwell & Hartzell, Inc.

Appliances, Household
Chicago Flexible Shaft Co.
Easy Washing Machine Corp.
Edison Gen. Elec. Appliance Co., Inc.
Frigidaire Division
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Kelvinator Division
Leonard Division
National Enameling & Stamping Co.
Noblitt-Sparks Industries, Inc.
Norge Division
Standard Elec. Stove Co.
The Silex Co.
Utility Electric Co.
Thermador Elec'l Mfg. Co.
Wesix Elec. Heater Co.
Westinghouse Elec. Supply Co.
The Woolwine-Norris Corp.

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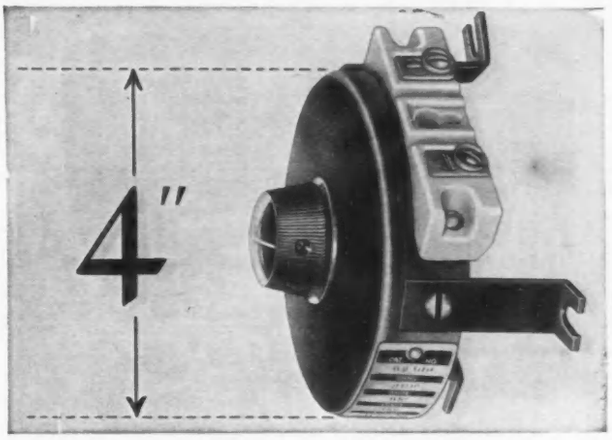

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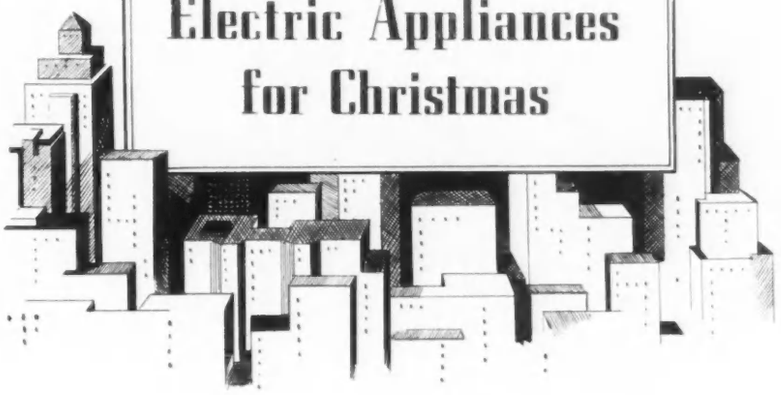

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